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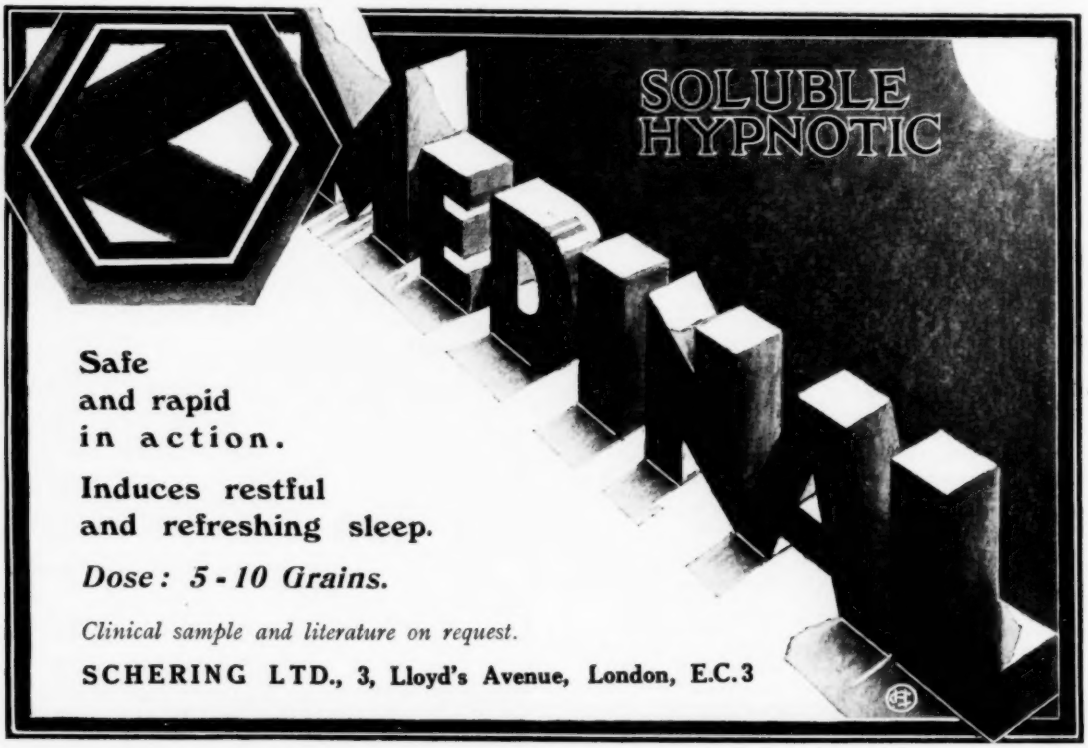

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JUNIOR NEUROLOGIST TO KING'S COLLEGE HOSPITAL; ASSISTANT PHYSICIAN TO THE NATIONAL HOSPITAL, QUEEN SQUARE.

LECTURE I.

THE subject of old age has never been a popular one with the medical profession. Among both savage and civilised peoples a certain lack of interest, and even of sympathy, is associated with the infirmities and maladies of the aged. Problems of diagnosis and of therapy tend to be neglected, to the detriment of the individual and still more of the community. Most contributions to the study of old age have been of a speculative nature, dealing with such aspects as causation and even prevention. A certain number of writers have devoted themselves to the more tangible problem of disease in old people, and within the last century a small series of monographs has accumulated.

Thus, ten years after Canstatt's work [1] which appeared in 1839, came Dr. G. E. Day's [2] "Domestic Management and Diseases of Advanced Life." The well-known work of Durand-Fardel [3] was issued in 1854 and Geist's [4] monograph in 1860; three years later Maclachlan,[5] who was the medical officer in charge of the Royal Hospital, Chelsea, published his "Practical Treatise on the Diseases and Infirmities of Advanced Life." Two important French monographs followed—namely, Charcot's [6] Clinical Lectures (1868) and the "Étude Clinique et Anatomo-Pathologique sur la Vieillesse" of Demange [7] (1886). At about the same time in this country Sir George Humphry [8] published his monograph on "Old Age," containing the results of a systematic investigation of the health and habits of a large number of centenarians. No further contributions appeared until 1909 when Schwalbe's [9] "Lehrbuch der Greisenkrankheiten" was published, and also in France Rauzier's monograph.[10] In 1913 Saundby's [11] book on "Old Age" was published, and in the same year Schlesinger [12] wrote his treatise on "Alterskrankheiten," a reprint of which was issued a few months ago. Nascher's "Geriatrics" [13] was published in 1919. In a class by itself is the delightful and informative Linacre Lecture delivered by Sir Humphry Rolleston [14] in 1922 on Some Medical Aspects of Old Age, and which is surely the most thoughtful and inspiring monograph on this subject.

I have been unable to trace, however, any volume dealing with the neurological aspects of senility, and the only contribution on the subject which I know is the Bradshaw Lecture delivered before this College in 1915 by Dr. Michell Clarke, on the Nervous Affections of the Sixth and Seventh Decades of Life.[15] Although monographs devoted to this problem are few, many brief but valuable contributions have appeared from neurologists who have been privileged to work as directors of institutions for chronic nervous disorders. Thus the work of Lhermitte and his pupils, and that of Schuster, are monuments of clinical observation and breadth of vision in this particular aspect of neurology.

To preserve this study from the pitfalls of discursive speculation we must content ourselves primarily with the mere collection of data; an exact knowledge of the clinical and anatomical facts is essential before we can discuss the neurological aspects of old age in a scientific and dispassionate manner. For this reason I have thought it wise to reverse the usual order of descriptive technique and to deal first with the pathological side of the problem. Furnished in this way with a picture of the anatomical processes we are better able to evaluate what we encounter at the bedside.

The Senile Brain.

In this first lecture we will consider the morbid changes seen in the nervous system of individuals who have died at an advanced age.

Contributions to the pathology of the senile brain have not been numerous. The earliest record which I have been able to trace was made by William Harvey [16] in the *Philosophical Transactions* for 1635. At the command of King Charles I., Harvey conducted a post-mortem examination on the famous Thomas Parr, of Great Wollaston, Shropshire, who died at the age of 154 years. Harvey mentions, after describing the various viscera, that the brain was "healthy, very firm and hard to the touch." In the fifth volume of the *Philosophical Transactions*, covering the period 1700–20, Dr. James Keill [17] recorded the autopsy appearances in one John Bayles, a button-maker of Northampton, who died at the age of 130. "The brain" we are told "was more firm and solid than usual, and, in cutting, hardly moistened the sides of the knife. The ventricles were full of serum." Dr. Keill relates that the patient had been blind for some years, but that the hearing was good. For some years prior to death the patient's bowels had been opened, on an average, once every 10 to 12 days.

Dr. Edward Holyoke, a respected physician at Salem, Massachusetts, died in the year 1829, having attained the age of 101. After his death, a committee of friends wrote a short appreciation and adding a collection of his letters and notebooks, published a little monograph [18]; a copy of this rare work is upon the shelves of the library of the Royal College of Physicians. Herein is included a description of the autopsy, and we learn that the dura was adherent to a very dense calvarium. The sulci were widened and deepened, and the cortex was unusually dark. The brain felt unduly hard . . . . "as if subjected to the action of alcohol." A disproportionate atrophy of the cerebellum was noted.

A short description was given by Berruti [19] in 1857 of the brain of an Italian who died aged 104 years. The chief point of interest was an extensive ossification of the dura mater.

Prof. George Rolleston's anatomical study [20] of John Pratt, who lived to 107 years, followed in 1884. Rolleston mentions that the meninges were adherent to the inner table of the skull and that the arachnoid was opaque in patches. The convolutions were atrophied, especially in the prefrontal lobe and the Rolandic gyrus. A moderate dilatation of the lateral ventricles was present, the lining membrane being smooth. Numerous corpora amylacea were visible microscopically beneath the ependyma.

Sir George Humphry's note in 1889 [8] upon the pathological findings in a female of 103, makes the next contribution; we are told that the brain was shrunken, the fissures being broad and occupied by an excess of cerebro-spinal fluid. The skull was

* The Goulstonian Lectures for 1931, delivered before the Royal College of Physicians of London on March 10th, 12th, and 17th.

thick and heavy, weighing 28½ oz. In this paper Humphry quotes a personal communication from Prof. Cunningham, who in the same year had examined the organs of a woman of 106; he had found the brain firm and healthy in appearance, with wide separation of the gyri. A model of this brain was placed in the Museum of the University of Cambridge.

The most important landmark in our knowledge, however, is the work of André Léri,[21] who in 1906 published his thesis on "Le Cerveau Sénile." This monograph is still in many respects the most authoritative presentation of the subject. It was followed one year later by the papers of Anglade and Calmettes [174] on the histology of the senile cerebellum.

Within the past 20 years a few short contributions have appeared, mainly based on isolated cases. Thus there are the papers of Costantini (1911)[22] on the brain of a man of 105; of Marinesco and Minéa (1921 and 1925), who examined a number of Roumanian brains, including one of a female aged 105; of Kuczynski and Kopylowa (1925),[23] who studied minutely the organs of a man dying at 118, and a recent description by Askanazy[24] of a woman who died at 101. Oseki[25 26] in 1924 had studied the minute changes in the cortex and basal ganglia in a series of octo- and nona- genarians.

In addition to these data, there are a few interesting studies of the brains of various eminent individuals dying in late life. Thus we have Louis and Chambardel's[27] investigation of the brain of Anatole France, who died at the age of 84½, Mauer and Weimann's[28] description of the brain of Ernst Haeckel, who was aged 86. The brains of Mommsen the historian (aged 87), and Bunsen the chemist (aged 89) were also examined minutely. Spitzka[29] made a careful anthropometric investigation of the brains of six eminent American scholars, and in his monograph detailed similar studies of 137 outstanding individuals, a large number of whom had lived to a great age.

The foregoing constitute most of the important contributions to our knowledge of the senile brain. Senile dementia has, of course, been studied histologically with the utmost detail by many brilliant workers, particularly Alzheimer, Simchowicz, Marinesco, Perusini, Rizzo, Uyematsu, and Grünthal.

My own contribution is based upon the histological examination of a series of 15 senile brains, at present under pursuit in collaboration with Dr. J. Godwin Greenfield, pathologist to the National Hospital, Queen-square. These brains are from individuals aged as follows: 75 (1); 80 (1); 86 (1); 90 (3); 92 (2); 93 (2); 95 (1); 96 (1); 101 (1); 102 (1); and 103 (1). In addition, we have studied the spinal cord from five octogenarians.

CRANIAL CHANGES.

The calvarium in old age is usually increased in thickness, an observation which was first made by Morgagni [175] in 1765. In the majority of cases this densification is uniform, but at times a focal osteophytic process is seen. Thus a hyperostosis of the inner table of the frontal bone is a characteristic—if somewhat rare—anomaly. According to Greig's excellent description,[30] this process starts as irregular excrescences on either side of the sagittal sulcus, midway between the foramen cæcum and the coronal suture. These multiply and, spreading fanwise, occupy most of the frontal bone, but never extend posteriorly into the parietal area. Microscopical examination reveals a thickening of the inner table, the cancellous bone becoming overlaid with compact bone which later becomes eburnated.

Numerous hypotheses have been hazarded to explain this peculiar change. Characteristically present in old age, it is much commoner among females, in the ratio of 7 : 1. Although it is often said to be unaccompanied by symptoms, Morel[31] has drawn attention to a group of clinical manifestations which he associates with this osteophytic process. The features of the so-called Morel's syndrome will be discussed later.

Greig has suggested that intracranial hyperostosis is the result of a disuse-absorption of calcium and phosphorus salts from the skeletons of senile individuals, whose muscular activities are limited; the excretion of these salts is inadequate and there results a deposition of osteophytes. Humphry,[32] as well as Thoma[33] and Morel, drew attention to the presence in the majority of these cases of atrophy of the cerebrum, particularly in the frontal lobes. Adherence of the meninges to the inner table will, therefore, set up a more or less constant traction upon that region of the calvarium, stimulating bone formation. In the case of isolated small exostoses, Thoma suggests that some local circulatory or nervous disorder may be responsible.

Much less frequently an atrophy of the skull bones may be encountered in advanced life, a process which was first reported by Koehler in 1768. Humphry states that all the bones of the cranium and face may be reduced in calibre and thickness. This is produced by the outer table receding and encroaching upon the diploë, so that ultimately only one brittle table is left. At other times the atrophy may be localised usually with strict symmetry to the parietal bones. The atrophic areas merge into normal bone by a gentle shelving. Several excellent specimens of this anomaly are contained in the Museum of the Royal College of Surgeons. Occasionally, the two processes of parietal atrophy and hyperostosis of the inner table may coexist. The genesis of cranial atrophy is obscure, and Humphry suggests that the pressure or traction of the occipito-frontalis tendon may be important, a view later supported by Chiari.[34]

THE MENINGES.

Alterations in the meninges are practically constant. The dura mater is almost always thickened, and in many cases adherent to the inner table of the skull. Longitudinal densifications may occur along the course of the blood-vessels. The Pacchionian bodies are often hypertrophied. Calcareous patches are not infrequent and at times areas of ossification may exist. Bony plaques are, however, less common in the cranial dura than in the spinal leptomeninges; they occur, of course, in conditions other than senility, and Leopold[35] stresses arterio-sclerosis as a causative factor.

Proliferative changes in the dura were usually described, following Carpentier and others, as chronic meningitis, and when there was an associated increase in vascularity of the tissues, the term pachymeningitis hæmorrhagica interna used to be applied. This word is rarely employed nowadays, however, and the modern description is that of chronic subdural hæmatoma. It is well known that this lesion may supervene in the aged after very slight injury; it was present in four out of the 50 senile brains examined by Campbell.[36]

The leptomeninges may also be thickened and may be œdematous in appearance. Opaque areas are common, resembling the milky patches in the pericardium. Léri, however, insists that the pia arachnoid may become thinned in old age and show numerous perforations.

Usually the meninges strip off the hemisphere with particular ease in old age, except over the occipital poles. But when foci of softening exist in or immediately beneath the cortex, an adhesion results; in cases of diffuse vascular disease the meninges may be everywhere so adherent as to leave a pock-marked surface to the cortex (= the *état vermoulu* of Pierre Marie).

The histological appearance of the meninges in old age comprises a proliferation of all elements with concomitant regressive changes. There is often a conspicuous cellular infiltration with fibroblasts, macrophages, and pigment cells. Clusters of proliferating mesothelial cells are frequently seen. The innermost layer of the pia-arachnoid may be invaded by numerous corpora amylacea, and there is often a large amount of pigment visible.

When the meninges have been stripped the brain usually shows a striking diminution in volume. The convolutions are reduced and the fissures are widened and occupied by an excess of subarachnoid fluid. Although the shrinkage is universally distributed, it is always most evident in the anterior two-thirds of the brain. Spielmeyer states that the left hemisphere is usually more atrophied than the right, but I have not been impressed by any such difference. The pons, midbrain, and cerebellum usually show a less obvious wasting, but a reduction in the size of the medullary olives is common (v. Braunmühl).[37]

SHRINKAGE OF THE BRAIN.

The consistency of the brain may be altered. At times it is described as harder than normal, but quite often—particularly when multiple vascular lesions are present—the brain feels soft to the touch.

Some index of the brain shrinkage is afforded by weighing the hemispheres. Numerous statistical tables have been compiled—by Parchappe, Huschke, Broca, Rey, Boyd, and others—which suggest that after the age of 40 or 50 there is a progressive reduction in weight. In advanced age a loss of 160–200 g. may be encountered. According to M'Gaffin[38] the reduction is greater in the female than in the male. Exceptions are numerous to the rule that the brain loses weight with increasing years, and one must remember that the cerebrum may vary considerably in normal subjects, and that the presence of vascular disease would profoundly alter the results. None of this statistical work is recent, and I know of no extensive study of the weight of the brain in advanced years, carried out with the elaborate and accurate technique of Reichardt.

The results in those of my cases where weights were noted are as follows:—

Case	Sex.	Age.	Hemisphere.		Pons and cerebellum.	Total.
			Left.	Right.		
1	M.	75	503	497	163	1163
2	M.	80	550	525	165	1240
3	F.	86	488	472	146	1106
4	M.	90	542	548	163	1253
5	F.	90	496	473	144	1109
6	F.	92	392	392	129	913
7	F.	92	450	459	127	1034
8	F.	93	408	409	145	962
9	F.	93	—	—	—	1043
10	M.	96	465	469	133	1067
11	M.	101	501	502	166	1169
12	F.	102	336	358	121	815
13	F.	103	457	462	132	1051

It must be realised that brain weights are unreliable indices of the reduction in volume, because many variable factors are present. Thus the length of time over which the brain has been immersed in fixative is important. Moreover, there may occur with advancing years an alteration in the specific gravity of the cerebral substance so that the normal standards of volume and weight no longer apply.

Further alterations are apparent when a horizontal section is made through the hemispheres. The reduction in volume is now emphasised by a dilatation of the lateral ventricles. It will be evident that the ribbon of cortical grey matter is narrowed, particularly in the frontal and temporal areas. Still greater wasting is seen in the white matter, and the distance between the cortex and the cornua of the ventricles is markedly reduced. The corpus callosum constantly shares in this atrophy.

The central grey nuclei of the basal ganglia are smaller than normal and appear compressed by the state of internal hydrocephalus. It is apparent also that the grey matter is everywhere of a slightly darker tint than usual.

Another common naked-eye change consists in numerous lacunes of disintegration scattered throughout the basal ganglia, and to a lesser extent throughout the white matter. These appear as small perforations which may be few in number or in extreme cases so numerous as to constitute a true *état criblé*.

The wall of the ventricles is often studded with small granulations and markings of various types. Four distinct kinds of subependymal change may be described: (1) *granulations* which differ from those seen in general paresis in their greater size; (2) parallel *ridging* resembling the markings on a dog's palate; (3) dead-white *plaques* recalling patches of buccal leukoplakia; and (4) circular warty *excrescences*.

Microscopical Appearances of the Senile Brain.

The histology of the senile nervous system can best be discussed along four main heads—viz., changes in the nerve-cell and fibre; neuroglial alteration; abnormal depositions of amorphous material; and vascular changes.

THE NERVE-CELL AND FIBRE.

Neuronal changes consist primarily in a cell atrophy. This is of a numerical character, as the occurrence of a pure volumetric atrophy—i.e., reduction in the size of the constituent elements with maintenance of a full numerical complement, has never been proved. It is well known that with advancing years there is a generalised diminution in the nerve-cell count which is roughly proportional with age and also with the severity of concomitant mental deterioration. This diffuse cell-atrophy must be clearly distinguished from the patchy areas of atrophy in cerebro-vascular disease. This particular feature of senility has been studied statistically in both human and animal brains. Thus Ellis[39 40] has found a progressive decrease in the number of Purkinjé cells within the cerebellum after the age of 30 to 40. His own figures show that within an equivalent unit area there is to be expected at the age of 42, 823 cells; at 65, 591; at 79, 500; at 94, 462; at 100, 445. According to Inukai,[41] the number of Purkinjé cells in an albino rat 1000 days old is about 80 per cent. of the complement at birth. Harms[42] found in the cerebellum of a woman of 80 only 25 per cent. as many cells as in a young adult. Ellis says that though this cell-atrophy is a diffuse process, it is especially evident in the anterior lobe and less marked in the dentate nucleus.

A cell-atrophy is constantly present in the cerebral cortex, particularly in the frontal and temporal regions. This outfall is perhaps most evident in the third layer of the cortex, but the deepest laminæ

may also show extensive atrophy. There is, however, no essential disturbance of the stratification. A similar reduction in the number of cells is found within the corpus striatum, the locus niger, and the olives.

Consequent upon the outfall of neurones there is a diminution in the number of myelinated fibres revealed by shrinkage of the white matter. The dendritic processes are also reduced in number, especially in the tangential fibre layer.

Important histological changes are recognisable in the surviving nerve-cells. The neurone is usually diminished in size. Less commonly there is a process of gigantocytosis, whereby neurones attaining the dimensions of Betz cells are seen in the second and third cortical laminæ, particularly in the cornu ammonis, the hippocampus, and the frontal lobe. (Minéa [43]; Marinesco and Bistriceanu [44]). The nerve-cell is often the seat of extensive pigmentary change caused by an increase in the number of lipofuchsin granules, and also by transformation of the mitochondria. This view is supported by the work of Bertrand and Hadzigeorgiou [45] who, by their infra-red technique, found an absence of mitochondria associated with an excess of lipochrome, in two morbid conditions only—namely, amaurotic family idiocy and senile dementia.

Pigmentary surcharge is also very evident in the striatal cells and in those of the dentate nuclei. Lhermitte [46] has described, in addition, an infiltration of the Betz cells with iron in old age.

Associated with the lipoid change, and yet distinct, is a fatty degeneration of the nerve-cells. This is usually most apparent in the superficial layers of the

FIG. 1.

Inner aspect of the skull from a patient suffering from senile dementia, to illustrate the hyperostosis of the inner aspect of the frontal bone.

cortex, and at times the cells are converted into sacs filled with fatty droplets. Grünthal [47] finds this type of change most marked in the cornu ammonis, and least evident in the occipital lobe. In the cerebellum fatty deposit is most obvious in the upper and outer granular layers, and occasionally in the Purkinjé cells.

Although Vallée [48] and also Manouélian [49] have compared the type of neuronal alterations in the nervous system of senile dogs with those seen in rabies, it is the general experience that the senile type of neuronic decay is essentially different from that of toxi-infective processes. In old age the nerve-cell atrophy belongs to the so-called abiotrophic type, described by Simchowicz as "granulovacuolar degeneration." Here the cell body is small and globular with a peripherally situated nucleus; the nucleolus is deformed and may be surrounded by basophil inclusions. Later the cell shrinks to a ghost-like, shadowy area without recognisable structure. At the same time the dendrites alter, at

FIG. 2.

Outer aspect of left hemisphere of a female (non-demented aged 103. Weight of left hemisphere, 457 g.; right hemisphere, 462 g.; pons + cerebellum, 132 g.; total, 1051 g.

first increasing and later diminishing in size and becoming tortuous.

Of particular importance is the appearance of peculiar changes within the intracellular fibrillary network, first described by Alzheimer.[50] In the words of the original description " . . . . in the interior of the cell, which is otherwise normal, one or more fibrils are conspicuous on account of their special thickness and the density of their impregnation. Later, other neighbouring fibrils participate, and these form thick bundles lying in the periphery of the cell. Finally, the cell with its nucleus disappears, and the site becomes marked by a spiral-like bundle of fibrils." Every stage of this process is demonstrable, from simple intensification of the intracellular fibrils up to a mere "skeleton" composed of tangled, densely stained coils. The nature of these Alzheimer "tangles"—as they are called—was formerly under much dispute; certain histologists believed they were of neuroglial nature and situated outside the cell; to-day they are usually regarded as neurofibrillary in origin.

It is interesting to recall that Metchnikoff [51] regarded senescence as a conflict between the connective tissues (neuroglia) and the noble elements (nerve-cells), in which the former were victorious by reason of a process of phagocytosis. This, he claimed, was histologically demonstrable in the presence of macrophages surrounding and ingesting the ganglion cells. The problem was specifically investigated by Saigo [52] with entirely negative results. His experience tallies with that of all other workers, and a process of phagocytosis has never yet been demonstrated in the senile cortex.

A peculiar change in the Purkinjé cells has been described by Bouman [53] within the brains of aged subjects, particularly when mental change is present. There occurs in the proximal portion of the axons a spindle-shaped swelling of homogeneous appearance but with a peripheral net-like structure and sometimes vacuolation. Bouman speaks of these swellings as "torpedoes."

Vacuolation and degeneration may occur in the intracellular neurofibrils, forming tangled heaps. Lafora found peculiar changes in the dendrons of the cells of Ammon's horn in a senile dog; a large number of branching collaterals sprouted at a little distance from the cell body, like feathery tufts. Hortega found this change in a large number of aged animals,

FIG. 3.

Mesial aspect of the right hemisphere of a male dement aged 90, showing atrophy of the paracentral and fornicate gyri and gross wasting of the corpus callosum. Weight of right hemisphere, 542 g.; left hemisphere, 548 g.; pons + cerebellum, 163 g.; total, 1253 g.

but discovered that it was not limited to states of senility. Prados y Such confirmed this finding in the polymorphic zone of some monkeys and regarded it as a proliferative change associated with the process of growth. Berlucchi's [54] conclusions were in general agreement.

In the process of disintegration the myelin sheaths become thinned and later break up into fatty globules.

THE NEUROGLIA.

Neuroglial alterations are constantly present, and proliferative as well as regressive changes may be recognised. The former comprise an overgrowth of neuroglial fibres which, though diffuse in extent, has certain sites of predilection. Thus an intense gliosis may occur in the cortex immediately under the pia and in the perivascular tissues. A reticulated appearance may result, and "monster cells" may be visible.

Gliosis in the regions of the locus perforatus posticus and lateralis may cause a shrinkage of the brain away from the basal arteries and a wide dilatation of the perivascular spaces. This change takes part in the formation of the *état criblé* in the basal ganglia and internal capsule. Holzer and also Grünthal found a noteworthy increase in the glial fibres in the white matter of the occipital lobe. A subependymal gliosis is characteristic and may be uniform or nodular, giving rise in the latter case to the subependymal granulations visible to the naked eye. There is a moderate proliferation of microglia cells with an increase in the amount of protoplasm.

Regressive changes in the glia include the appearance of rod cells, especially in the molecular layer of the cornu ammonis; lipoidal changes; Grynfeltt's mucocytic degeneration of the oligodendroglia. Hortega has described in the amœboid glia cells of the senile brain rolled-up glia fibrils resembling Alzheimer tangles in the neurones. The microglia cells are often altered, the nuclei being pale and swollen and often show little protuberances; the cell processes may be increased in size (Creutzfeldt and Metz).[55]

In the cerebellum the gliosis is more patchy, being restricted to the perivascular zones, the depths of the fissures, the white matter surrounding the dentate nuclei, and the regions immediately around the Purkinjé cells. Rod cells may occur in the white matter.

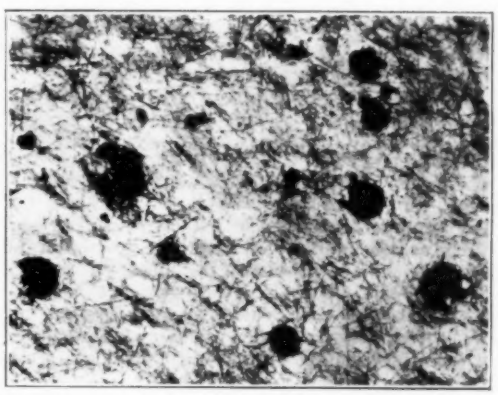
Certain authors have described "Klasmatodendrosis" or fragmentation of the neuroglial prolongations as a senile change, but Bonfiglio [56] has concluded that this is an artefact.

AMORPHOUS DEPOSITS.

The amorphous depositions which occur in the senile brain include corpora amylacea, ferruginous accumulations, and senile plaques.

Corpora amylacea, which were first described by Purkinjé in 1837, may be defined as "degenerative products of diverse form and origin, with concentric lamination, giving a typical iodine reaction" (Bertrand).[57] These appear as spherical bodies, usually stratified, measuring 15–20 μ in diameter. Each body may be surrounded by a glial proliferation. The chemical composition is believed to comprise a complex albumin with free chains which may fix molecules of sugar, calcium, and pigment. They are well demonstrated by Gram's stain and by Nile blue. Siegert [58] distinguishes two varieties: *corpora versicolorata*, giving a metachromic reaction with iodine, and *corpora flava* which responds to tests for hyaline. Amyloid bodies occur only rarely in the normal brain, but are numerous in old age. They are seen usually lying outside the nerve-cells, throughout the central nervous system, and particularly around the vessels, under the pia and ependyma, the external medullary layer of the cornu ammonis, and

FIG. 4.



Senile plaques in the cortex of a senile dement aged 91. Bielschowsky's stain.

the fimbria. The pathogenesis is uncertain; Alzheimer, Stürmer,[59] and others regard them as "neuronic concretions," or products of cerebral metabolism, while Obersteiner and Redlich favour a glial origin. Iwata,[60] supporting the latter hypothesis, believes they are remote products of neuroglial involution, and that their presence indicates that the glia fibrils must be at least ten years old. Recent studies by Ferraro and Damon [61] suggest that the amyloid bodies are derivatives of the oligodendroglia cells.

Deposits of free iron are common in the brain after middle life. They occur as "degeneration bodies" in the perivascular spaces of the globus pallidus and

probably arise by an unmasking of the intracellular iron normally present in that nucleus. Weston Hurst [62] regarded this change as "an expression of the proclivity of the globus pallidus to undergo degeneration in the second half of life," and this conclusion has been supported by Hadfield,[63] who believes that "pallidal siderosis is the expression of a slow evolutionary atrophy affecting the nuclei in at least 60 per cent. of people over the age of 30."

We now come to the most striking and important feature in the histological study—namely, the so-called "senile plaques." [64] Tilney has aptly referred to these formations as "the black marks of the aged brain" . . . . "the peculiar badges of old age." Their discovery dates from 1892, when Blocq and Marinesco [65] found in the cortex of an aged epileptic curious circular masses, about 60 μ in diameter, staining intensely. Other important observations followed, notably by Redlich, Perusini, and Alzheimer, and many descriptive terms were adopted. Miyake spoke of them as "glial rosettes," Léri as "sclérose névroglique miliare"; we owe the term "senile plaque" to Simchowicz. A series of papers by Fischer [66] from 1907 to 1910 form important landmarks, and this author proposed the word "Drusen" or "drusigen Nekrosen" and also—from their resemblance to mycotic lesions—"Sphärotrichien."

Senile plaques appear as circular areas of densification scattered throughout the cerebral cortex, staining deeply with silver. They vary in individual appearance, but certain form-constants recur—viz., rings, radial figures, star-shaped structures, and circular homogeneous areas. A nuclear-like body of amorphous or cellular structure often lies in the centre. Histochemical study reveals the presence of some substance allied to amyloid, and lipoid may also be demonstrable. Macroglia and oligodendroglia are concerned in these plaques to a minor degree, but microglia cells are important constituents; neurofibrils and sometimes myelinated fibres are seen.

The topographical distribution of the plaques is of interest. They are practically confined to the cerebral cortex especially in the frontal lobe, the cornu ammonis, and the island of Reil. They have also been described in the basal ganglia and in the cerebellar cortex. The deeper layers of the cortex show the greatest number of plaques.

The important question which arises in connexion with the senile plaques concerns their association with senility on the one hand and psychosis on the other. It is indubitable that in the majority of cases of senile dementia as well as in Alzheimer's disease senile plaques occur in large numbers. Cases are encountered, it is true, in which few plaques, if any, are seen in the brains of aged individuals who are grossly demented; such instances are quite exceptional, however, and it is arguable that they might represent some peculiar clinico-pathological grouping outside the category of true senile dementia. In cases of general paralysis of the insane occurring in the aged, Prof. Jakob informs me that senile plaques occur in abundance. Plaques may occur without doubt in the brains of aged individuals who have never shown obvious mental symptoms; Simchowicz [67] believes that they are essentially associated with advanced age, but do not develop before 90; according to his view, they multiply with advancing years and are especially numerous in cases of dementia. This generalisation is acceptable on the whole, but it must be remembered that brains of extremely aged subjects have been examined without revealing plaques. Lewy [68] found no plaques in the brains of aged Turks, and even in two cases of senile dementia among Turks Schükry [69] found no plaques. This fact suggested to Spatz [70] that there may be racial variations in the degree of susceptibility to the formation of plaques. Marinesco failed to discover plaques in individuals of 99; Kuczynski made no mention of plaques in the cortex of his patient aged 118; Costantini, in the brain of a normal old man of 105, found only a few plaques; the same held true of two of my patients who were aged 101 and 103 respectively.

Verhaart [71] distinguishes "benign" plaques which provoke either no glial reaction at all or else contain healthy Hortega cells, from "malignant" plaques containing a great number of degenerated Hortega cells. The former type may be seen in mild cases of senile dementia, and Verhaart has also seen them in small numbers in the cerebrum of a normal old man of 103; the latter are characteristically present in Alzheimer's disease.

The present conception of the problem may be expressed somewhat as follows: senile plaques occur in the normal senium provided the individual had attained a very great age (? over 90); they occur very sparsely, however, so long as the mental condition is good. In cases of senile psychosis they appear at a much earlier age and may be very numerous indeed; cases of dementia in old age occasionally show no plaques, and such cases may well belong to a psychological category of their own. In Alzheimer's psychosis plaques occur in great numbers and at a relatively youthful age.

It is obvious that the problem is complex and much remains to be explained. We need more information as to the occurrence of plaques in conditions other than dementia and senility; and whether the number, size, and arrangement of the plaques bear any relationship to particular clinical pictures.

Laignel-Lavastine and Tinel [72] have described "fernleaf" argentophil depositions within the senile cortex which resemble the ordinary plaques, but differ slightly in the details of their staining reaction and physical properties. These "fatty plaques" as they were called were regarded originally as immature senile plaques and intermediate forms were described between the two types. Tinel looked upon the classical senile plaque as a "vestigial, cicatricial, and dystrophic relic" left by the reabsorption of his type of fatty plaque. The consensus of modern opinion, however, regards the latter as artefacts.

Within the cerebrum of the patient aged 118 studied by Kuczynski and Kopolowa, mention is made of albuminous depositions, reacting to some extent to tests for iron, scattered in the glial fibre layers, especially under the ependyma.

THE BLOOD-VESSELS.

The involutional changes in the blood-vessels, and the lesions resulting therefrom, may be enumerated in the very briefest terms.

Arterio-sclerotic changes—of the type described by Allbutt under the term "decrescent"—are, of course, very commonly present. It is important to notice, however, that they may be entirely absent in a particular case. The changes when present are almost always more marked in the larger vessels of the base—i.e., the vertebral and basilar arteries and the circle of Willis.

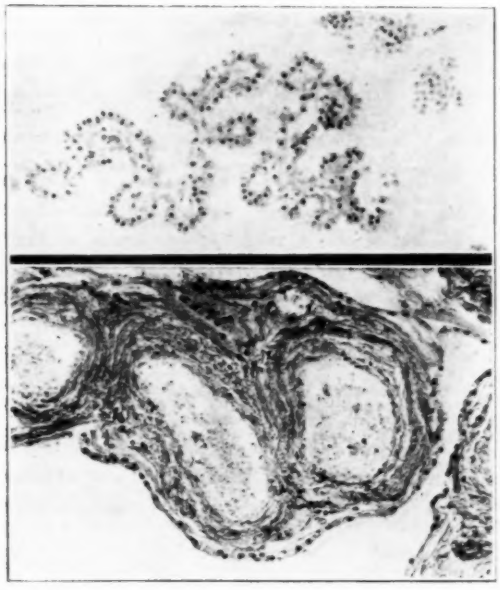
Distinct from the lesions of arterio-sclerosis are certain minor histological alterations which must be regarded as typical of advanced life. At the present time we are engaged at King's College Hospital in a histological study of the cerebral arteries at all periods of life, with a view to determining the characteristic involutional picture. Among the commoner changes

in advanced life may be mentioned: thickening of the media and intima (Triepel) [73]; hyaline changes (Klissurow) [74]; splitting of the internal elastic lamina (Hackel).[75] Deposition of iron in the adventitia and media of the pallidal arteries is of very common occurrence (Weston Hurst).

Of more particular interest are the alterations which are commonly encountered in the choroid plexus with advancing years. This, too, is a problem which is at present under investigation at King's College Hospital, and which has already been studied in recent years by von Zalka [76] and others. The more usual changes include cyst formation; proliferation of connective tissue; vacuolation and pigmentary degeneration of the epithelium; depositions of calcareous, hyaline, and psammomatous bodies.

It will suffice merely to mention the diverse effects—immediate and remote—produced by vascular disease within the nervous system, as a full description would be irrelevant. Areas of softening—of every dimension; small hæmorrhagic foci; lacunes of disintegration; the worm-eaten cortical change of Pierre Marie—these are all obvious macroscopic features. Disseminated areas of atrophy are often seen and comprise, according to Lhermitte and Klarfeld,[77] three histopathological variants—viz., reticulation, areolation, and miliary necroses. Spielmeyer [78] has stressed the occurrence of "bleaching" or cortical areas which

FIG. 5.



The choroid plexus in youth and old age: above, from a boy aged 11; below, from a non-demented woman of 102, showing the great proliferation of connective tissue and vascular hypertrophy.

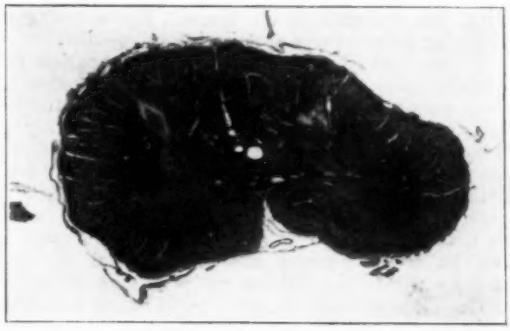
fail to fix with various stains; it is believed that these zones represent ischæmic areas without, however, gross narrowing or occlusion of the nutrient vessels.

Under the microscope a typical glial increase is to be recognised, most often perivascular in arrangement. A gliosis in the frontier between cortex and white matter is not rare, and is spoken of as the encephalitis subcorticalis of Binswanger. Various glial derivatives are encountered, such as scavenger cells and astrocytes.

Regional Pathology of the Senile Nervous System.

The foregoing description outlines the more striking changes common in the brains of folk dying at an extreme age. A short consideration may now be directed towards certain specialised regions of the brain, such as the pituitary body, as well as the spinal cord and peripheral nerves.

FIG. 6.



Trans-section of the lower cervical cord from a case of senile dementia in a man aged 82. A marginal gliosis is visible to the naked eye. (Greenfield-Mallory's stain.)

PITUITARY GLAND.

The pituitary gland, according to Lucien,[79] shows in old age no reduction in size or weight and no decrease in the parenchymatous elements, though Scheele [80] described a progressive cell atrophy and a diminution in specific gravity. Some increase in the amount of connective tissue is common, localised to the region of the hilus. Colloid—mainly of the basophil type—accumulates to a marked degree (Bolsi),[81] especially in the pars posterior (Cooper),[82] and pseudo-acinous formations are common.

THE SPINAL CORD.

The histological alterations within the spinal cord in old age have received far less attention than those of the senile brain. Although some of the earlier pathologists such as Cruvielhier, Rokitansky, Leyden (1875),[83] Demange (1881),[84] and Campbell (1894) mentioned briefly a few of the outstanding pathological changes, it was not until the appearance of Nonne's paper [85] in 1899 that a detailed study was undertaken. In 1900 Sander's important monograph [86] was published; since when Fluegel [87] (1927) has contributed to this chapter in pathology.

Meningeal proliferation may be seen around the spinal cord and calcareous plaques are not uncommonly attached to the pia-arachnoid; Sander has seen the whole cord completely encased by chalky deposits as by a suit of armour. Ossification may also occur in this situation.

The spinal cord itself may be obviously shrunken on naked-eye inspection, and on trans-section the normal contrast between white and grey matter may no longer be apparent. The more important pathological alterations within the cord are, however, microscopic in character.

Weigert-Pal's technique reveals an undue pallor which is particularly evident in the marginal zone. In some cases this process extends inwards and encroaches in particular upon the cerebellar efferents as well as Gowers's tract. Occasionally wedge-shaped areas of pallor are seen, the base of which is

peripheral. Patches of perivascular demyelinisation constitute important changes, revealed by the methods of Weigert-Pal and of Marchi.

There also occurs an obvious reduction in the number of nerve-fibres, especially in the lateral and posterior columns.

Neuroglial proliferation is constantly present and always in the areas in which the myelin has degenerated. Thus the marginal zones, the perivascular areas, the lateral and posterior columns, are all the seat of a marked gliosis in which the nerve-fibres are frequently strangulated. Cuneiform areas of gliosis correspond with the demyelinated regions. The anterior and posterior commissures are also hypertrophied.

Widespread changes occur in the ganglion cells. Accumulation of intracellular pigment is constantly seen, a process which commences at one pole and later fills the nerve-cell. The nucleus stains darkly and becomes eccentrically placed; the nucleolus is angular and shrunken. Later, nucleus and nucleolus both disappear, leaving an amorphous mass of pigment. So widespread is this change that according to Sander, after 85 scarcely a normal ganglion cell can be seen. Fluegel has seen typical Alzheimer changes within the cells on one or two occasions.

The blood-vessels are also altered; their lumen may be increased but usually it is reduced or even obliterated. The vessel walls are thickened, especially the intima, and splitting of the elastica is usual. A shrinkage of the parenchyma away from the blood-vessel is often apparent, and there may be a mild perivascular infiltration with lipoid-laden cells.

Corpora amylacea are usually present in large numbers, especially near the entry of the posterior roots, along the septa and in the region of the blood-vessels. Senile plaques are rarely, if ever, present in the spinal cord.

Demange drew attention to a proliferation of the cells of the ependyma lining the central canal.

The foregoing pathological changes may exist in varying intensities, and we are told that they are not necessarily associated with abnormal clinical manifestations. Sander differentiates three varieties of pathological process within the spinal cord: (1) A slight form, characterised by a moderate and diffuse outfall of myelin, slight cell degeneration, and slight secondary glial increase. This type he associated with "physiological senility." (2) A severe form with diffuse demyelination and also focal lesions with gross neuronic decay and sclerosis. (3) A more acute type of degeneration characterised by numerous focal lesions; this variety may occur at a pre-senile age and is regarded by Sander as a form of arterio-sclerotic degeneration of the cord.

PERIPHERAL NERVES.

Still less is known about the involutional lesions of the peripheral nerves. Joffroy and Ackard in 1889 recorded degeneration of the sciatic nerves with a thickening of the vasa nervorum in a paraplegic woman of 63. Similar cases were quoted by Lorenz (1891) and by Ducil and Laury (1893). Campbell (1894) made a more detailed investigation; he found acute parenchymatous degeneration of some fibres in a peripheral nerve, and a great reduction in the number of larger axis-cylinders. Aggregations of fibrocellular débris and collections of minute nerve-fibres possessing an attenuated sheath of Schwann occupied the gaps. The peri- and epineurium were thickened and infiltrated with fat. The walls of the vasa nervorum were distinctly thickened. Both motor and sensory nerves showed these changes, especially in the more peripheral regions; the vagi in particular were severely affected.

Polyneuritis of the senile arterio-sclerotic type has also been recorded and studied pathologically by Schlesinger (1895)[88] and Franceschi (1903).[89]

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THE ADEQUATE TREATMENT OF SYPHILIS.

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In the article entitled The Modern Treatment of Syphilis in the *Practitioner* for February, 1931, Colonel L. W. Harrison rightly states that "a question of considerable importance is whether, in early cases, bismuth or mercury should be given concurrently with (i.e., in the same course as) the arsenobenzene compound." He is convinced that in early cases concurrent treatment should be adopted; and he gives reasons for his belief. Whether these reasons are good and sufficient is another matter. He is, furthermore, of the opinion that "those who are now treating their early cases on the plan of alternating courses of arsenobenzene with courses of Hg or Bi are laying up for their patients a heritage of neurosyphilis."

The last statement is very plain and very definite. Such an opinion, coming from so high an authority, is one to which much heed must be given, and one which must cause those who advocate the alternating method furiously to think. If Colonel Harrison's view is correct, then it is time indeed that the principles held by the alternating school were discarded for ever. If, on the other hand, he is wrong, then it is equally necessary that his error should be demonstrated.

While no scientific authority claims to be infallible, yet such is often practically assumed, acted upon, and adopted as a doctrine, by those who have hitched their wagon to that particular scientific star. The position of an individual may be so high that there is a distinct tendency for those who are his disciples to give an ex-cathedra value to all his opinions upon his special subject—to accept them without question, and to stigmatise as heretical any views to the contrary. The great John Hunter, by virtue of the high position he occupied in the medical world of his time, fixed upon venereology for many decades the error that syphilis and gonorrhœa were one and the same disease. Those who, like Benjamin Bell, held the diametrically opposite view, were regarded as scientifically lost souls. The authority of Hunter and his misinterpretation of his own ill-conceived and unfortunate personal experiment, completely eclipsed clinical experience and the more numerous and more scientific experiments of the comparatively obscure Bell.

To one who was originally of the concurrent school, but who for the last ten years has consistently advocated the alternating method, the statement by Colonel Harrison that such a method is a sure receipt for the manufacture of neurosyphilis is of the nature of a challenge which must be taken up. With my provincial rushlight I teach, and try to show, that arsenobenzene and bismuth should *never be given concurrently*; and since many of those whom I teach, and whom I have taught, will read Colonel Harrison's recent article, I am compelled without delay to present the other side of the case.

Reasons for the Alternating Regimen.

The main reasons why I adopt and teach the alternating method are:—

(1) Under the concurrent regimen, when arsenobenzene and mercury were exhibited simultaneously,

it was found—in my former experience—necessary to interrupt treatment after the first eight or ten weeks in order to prevent the patient showing signs of intolerance. During the treatment period approximately 4·65 g. of arsenobenzene compound (Ab.C.) and grs. 8 of mercury were given. This was not enough to cure the patient; and yet an interval of from two to four weeks had to be allowed in which no therapy was given, so that the patient could recover from the toxic effects of the remedial agents administered. During this time the parasite was permitted, unmolested, to entrench itself in deep-seated visceral structures, chiefly in the cardiovascular and central nervous systems. It therefore seemed to me more in accordance with common sense to try to arrange therapy so that rest-periods were abolished, and so that the parasite would be continuously subjected to an intense chemotherapeutic bombardment. This could only be done by exhibiting the drugs in alternate courses.

(2) It was found that under concurrency there were many patients who developed jaundice, nephritis, and exfoliative dermatitis. This was considered to be due probably to the double assault upon the hepatic, renal, and cutaneous systems. On changing over to the alternating system, the incidence of these complications almost reached vanishing point—especially nephritis. Jaundice and dermatitis became exceedingly rare and were only found in those cases who had apparently an idiosyncrasy to the drugs. In the few cases of jaundice which did occur, the condition could, in a large proportion, be attributed to causes other than therapy; and in every instance the type of jaundice was much less severe than formerly. Furthermore, it was found that, more often than not, after the condition had cleared, alternating therapy could be resumed without any recurrence taking place.

(3) Under the concurrent method many patients were found to have become drug-resistant or Wassermann-fast. This was thought to be due to the *Treponema pallidum* having developed an immunity to the action of the remedial agents. Akatsu and Noguchi [1] and also Klauder [2] showed experimentally that such resistance could take place. It seemed natural, therefore, to reason that it would be better to administer the drugs in separate series so that no sooner was the parasite threatening to develop a resistance to one agent, than a new weapon was brought into action; and, when the efficacy of that began to wane, a change was made back to the original one—or to another new one if such were available. Experience has shown this reasoning to be correct, for, since the adoption of the alternating method, drug-resistance and Wassermann-fastness have ceased to appear as practical difficulties.

(4) A study of the mode of action of Ab.C. and of Bi—for mercury has been discarded as being inefficient and a mere waste of time—also forced me to give up concurrent treatment. Ab.C. and Bi do not act directly upon the parasite. When injected into the body they stimulate the tissues to produce toxalbumins—conveniently termed *arsenoxyl* and *bismoxyl* respectively—which are lethal to *Tr. pallidum*. In other words, the Ab.C. and the Bi are the raw materials supplied to the body-factory which produces the finished article capable of destroying the parasites. The manufacture of these proteo-arsenic and proteo-bismuth combinations inevitably throws some strain upon the producing-tissues of the patient. Where the two raw materials are exhibited simultaneously, twice the load is cast upon the productive mechanism than when only one is given. The tissues are thus, under concurrency, more easily exhausted, and may finally cease altogether to produce the lethal toxalbumins. Thus we have another cause for drug-resistance and Wassermann-fastness.

By the alternating system this tissue exhaustion is prevented. The body is not overworked; and so the machinery is not so liable to break down. Before the production of arsenoxyl threatens to peter out, the Ab.C. is withdrawn, and another raw material in the form of Bi is introduced for a different class of machinery to work upon.

(5) Many cases, which formerly had become Wassermann-fast under concurrency, have been treated during the past ten years by the alternating method. A large proportion of these as a result became permanently negative.

Therapeutic Economy.

(6) Under the alternating method there is a saving in time and of the amount of remedial agents necessary to cure a case of early syphilis, say, in the sero-negative primary stage. For example, the course for such a case which is routine at Salford Municipal Clinic reads:

			Ab.C.		Bi.
Stabilarsan once weekly for	6	weeks ..	3·45	....	—
Bivatol twice ,, ,,	4	,, ..	—	....	0·64
Stabilarsan once ,, ,,	6	,, ..	3·45	....	—
Bivatol twice ,, ,,	4	,, ..	—	....	0·64
Stabilarsan once ,, ,,	6	,, ..	3·45	....	—
Total	26	,, ..	10·35 g.	.....	1·28 g.

There have been analysed some 136 cases of sero-negative primary cases who have completed the above course according to the time schedule or during a period not exceeding 30 weeks. The majority of these were treated with bismuth preparations other than bivatol which has only recently been introduced. These have been under observation for periods of from three months to five years. In no instance has there been any clinical or serological relapse. Upon the above course the cure-rate is 100 per cent. for sero-negative primary syphilis. The expenditure is 26 weeks of time, 10·35 g. of Ab.C. and 1·28 g. of metallic bismuth contained in a bismuth compound—in this case, bivatol.

Now the St. Thomas's minimum treatment prescribed for sero-negative primary cases consists of three courses as laid down by Colonel Harrison (loc. cit.). The first course may be tabulated thus:

Weeks.	Days.	Grammes. Ab.C.	Bi.	Weeks.	Days.	Grammes. Ab.C.	Bi.
1	1–7	0·45	0·32	11	71–77	—	—
2	8–14	0·45	0·32	12	78–84	0·90	—
3	15–21	0·60	0·32	13	85–91	0·90	—
4	22–28	—	0·32	14	92–98	—	—
5	29–35	—	0·32	15	99–105	—	—
6	36–42	—	0·32	16	106–112	0·90	—
7	43–49	0·75	0·32	17	113–119	0·90	—
8	50–56	0·90	0·32				
9	57–63	—	0·32				
10	64–70	—	0·32		Total..	6·75	3·20

An interval of six weeks is now allowed to elapse and the course is repeated. Another rest-period of six weeks then occurs, and again the course is gone through. The total time taken is thus 63 weeks, during which 20·25 g. of Ab.C. and 9·60 g. of bismuth metal are given. The two courses may thus be compared:

St. Thomas's ..	63 weeks	20·25 Ab.C.	9·60 Bi.
Salford	26 ,, ...	10·35 ,, ...	1·28 ,,

The Salford course thus shows a saving of 37 weeks, of 9·90 g. of Ab.C., and of 8·32 g. of metallic bismuth. The cure-rate is the same for both courses.

As I pointed out in the *British Medical Journal* for Feb. 21st, 1931, the method of computing therapy in terms of quantity given—Ab.C. in one case and Bi metal in the other—is practically meaningless, and does not permit of comparison between different courses to be made. Reckoning the therapy in terms of therapeutic units based upon the chemotherapeutic indices of the agents used, and taking into account the two-dimensional time-quantity factor, we find that during the 63 weeks of the St. Thomas's course (assuming that the therapeutic unit value of the bismuth is 0·75) in all 49·5 therapeutic units are given. In the Salford course, on the other hand, 24 therapeutic units are given in 26 weeks. The respective efficiency indices of the two courses therefore are:

$$\text{Salford E.I.} = \frac{24 \times 100}{26} = 92 \text{ (approx.)}$$

$$\text{St. Thomas's E.I.} = \frac{49{\cdot}5 \times 100}{63} = 79 \text{ (approx.)}$$

There thus appears to be a balance of 13 points in favour of the alternating Salford course. The end-results may be equally good, but the St. Thomas's course occupies an additional 37 weeks and requires 25·5 more therapeutic units. The latter must therefore be more prone to cause defaulting—i.e., uncured syphilis—because patients are more likely to attend regularly for 26 weeks than for 63 weeks. The St. Thomas's course is less economical, in so far as to get equal results a greater quantity of remedial agent is required. And apparently, since rest-periods are so necessary, it is more productive of toxic effects. During these periods, as has been already indicated, the parasite is free to do what damage it can.

Neuro-recurrence.

A great deal has been made of the alleged frequency of neuro-recurrences under the alternating method as contrasted with their rarity where the concurrent principle is adopted.

Working under the former method, my experience is identical with that of Colonel Harrison who proceeds on the concurrent principle—namely, that I have not yet seen a case of clinical neuro-recurrence. In this respect then there is no difference between the two lines of treatment.

Colonel Harrison quotes Moore and Kemp's [3] analysis of cases treated on the alternating plan at the Johns Hopkins Clinic. Out of 402 cases of early syphilis these workers found 59 relapses of a neuro-recurrent nature. What Colonel Harrison fails to explain is that all of the 59 cases who relapsed received utterly inadequate treatment, and that of the 71 patients who completed their course according to the schedule laid down by Moore and Keidal,[4] in no single instance did a neuro-recurrence or other relapse take place. In other words, neuro-recurrence only happened among early defaulters. It is a striking thing that in this Salford Clinic the experience is that even among defaulters under our alternating regimen neuro-recurrence has not yet been recorded. One factor in producing this type of relapse in America may be racial difference. I am more inclined to think, however, that the incidence in Moore and Kemp's series is more likely to be due to the use of 606 instead of 914, and of mercury instead of bismuth. There is much to support the belief that while 606 has a more powerful effect upon the parasites in the cutaneous structures than has 914, it has at the same time a greater traumatic toxic effect upon nervous tissue. Trauma forms a locus minoris resistentiæ, and so it is that the undestroyed parasites in the defaulter's body settle down in these damaged areas and give rise to neuro-recurrences. The 914 preparations, on the other hand, do not cause this nervous system damage, hence patients treated by such compounds are not so prone to neuro-recurrence. The relative potency of bismuth in the form of bivatol to mercury is as 12 is to 1, so that here is a very patent reason why neurological and other relapses are more likely to occur when mercury is used in preference to bismuth.

Another point of great importance is illustrated by the Moore and Kemp analysis, and it is that while the striking feature of the 59 cases was the inadequacy of the treatment given, all the neuro-recurrences happened within the first year, and in 97 per cent. within the first six months. The average lapse was only 2·7 months. Moore and Kemp state:

> "That precocious neurosyphilis can develop under these conditions is one of the strongest arguments for the continuous treatment of early syphilis. After once beginning treatment it is absolutely unsafe to permit a patient with primary or secondary syphilis to pass a single day without the influence of a treponemicidal drug."

As will be seen from an examination of concurrent schemes of treatment, continuous therapy is impossible because rest-periods are absolutely necessary. In the St. Thomas's course there is a no-treatment gap during the eleventh week, and a fortnight's interval during the fourteenth and fifteenth weeks. In addition there are the two intervals of six weeks each between courses—making 15 weeks in all during which nothing whatever is done.

Those who examine the St. Thomas's course might be tempted to ask: If concurrency is so right and alternation so utterly wrong, how does it come about that in this course *concurrent treatment is only given during five out of the 14 weeks of actual therapy?*

Effect of Combining Bismuth and Arsenic.

With respect to Kolmer's [5] paper on Bismarsen, it is stated that "while the arsenical content of 606 is 2·4 times greater than that of bismarsen, its trypanocidal activity is only twice as great, although bismuth alone is without trypanocidal activity." This is somewhat obscure; and it might not seem terribly wrong to some to interpret this as meaning that since the arsenical content of 606 is 2·4 times as great, while its trypanocidal power is only twice as great as bismarsen, the latter is thus of lower value than the former, and that this is due to the combined bismuth. It might be argued that so far from there occurring a summation of the respective activities of arsenic and bismuth, there is, when they are combined, actually a decrease.

There is, moreover, a serious fallacy in Colonel Harrison's—or is it Kolmer's?—argument. He clearly premises that trypanocidal and treponemicidal power increases directly with the arsenical content of the compound. From that he argues that since the arsenic content of 606 is 2·4 times greater than that of bismarsen, the therapeutic activity of the former should also be 2·4 times greater than that of the latter; but, since it is only twice as great, therefore the addition of bismuth to the latter has increased its therapeutic value. The fallacy lies in the assumption that the greater the metal content the greater the curative value. Such, however, is not the case either in respect of arsenical or of bismuth compounds. All that Kolmer's work shows is that the bismuth—which is inert as a trypanocide—has the effect, by some physico-chemical means, of making the arsenic more usable for the production of arsenoxyl. Bismuth and its compounds, it is true, have little or no effect against trypanosomes; but, as is well known, agents

which may be quite devoid of trypanocidal activity may have a remarkably high treponemicidal value. It was pointed out a long time ago that trypanocidal tests are only of value so far as organic arsenicals are concerned in the chemotherapy of syphilis.

With respect to bismarsen, it is important to consider the experience of O'Leary.[6] The acute signs of syphilis were slower to disappear than under arsphenamine, and so likewise the treponemicidal effect was less rapid. O'Leary records severe exfoliative dermatitis, and Schoch[7] mentions a similar occurrence with bismarsen. This condition developed after 14 injections of 0·2 g. twice a week by the intramuscular route. Kolmer states in his communication that in four cases of primary syphilis 0·2 g. of bismarsen caused the treponemata to disappear in from 36 to 120 hours. The lesions themselves, however, vanished more slowly than is usual after the intravenous injection of 606 or 914.

It is difficult to see from all this where the advantage of this combined arsenic and bismuth compound comes in.

There is no doubt, however, as was shown by Lehnhoff-Wyld,[8] that the addition of certain other metals to an arsenobenzene compound increases the "usability" of the arsenic. But Lehnhoff-Wyld found that the metal which gave the highest degree of enhancement was zinc, which by itself has no treponemicidal power. It is a matter of opinion whether it is necessary or advisable to raise the treponemicidal power of the arsenobenzene with the risk of increased toxicity and so on; but in any case, if it is so desired, there is no objection to the use of another metal provided it has no treponemicidal effect of its own, has no similar tissue reaction to that of arsenic or bismuth, and does not cause any great extra load to be thrown upon the eliminatory mechanism.

In my view, whatever metals are used in conjunction with arsenic or bismuth, they should not be members of Group V. of Mendelieff's periodic table. I have no insuperable objection to the concurrent use of Ab.C. and Hg because, whatever infinitesimal treponemicidal power the latter may possess, its mode of action upon the parasite differs radically from that of arsenic and bismuth. The Hg may make the arsenic more usable, and similarly with respect to silver-salvarsan. But after a combined course of Ab.C. and Hg—the latter being regarded as an enhancement for the arsenic and not as having a therapeutic value of its own—there should follow a series of bismuth injections alone, and so on in the alternating fashion. The concurrent school must finally accept the principle that, if they are correct, there is no limit to the number of treponemicidal agents which can—and ought—to be exhibited simultaneously. Thus, if compounds of the other members of Group V. of the periodic table—phosphorus, vanadium, niobium, antimony, tantalum, &c.—are synthetised and possess safe chemotherapeutic indices, they should all, according to the advocates of concurrency, be given together. Why is it that even those who still believe in mercury do not give Ab.C., Hg, and Bi simultaneously?

The alternating school will, if and when such compounds become available, exhibit them in successive series of injections, utilising those earliest and by preference which have the highest chemotherapeutic indices.

I do not say that the advocates of concurrency are utterly and irrevocably wrong—because syphilis can be cured not only by the simultaneous giving of divers remedial agents, but even by the exhibition of only one. But what I do submit is that concurrency, like monotherapy, is essentially unsound, that it is much more dangerous, is less successful, is more wasteful of time and material, and is therefore productive of a greater number of defaulters—uncured syphilitics—than is the alternating system.

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BLOOD CULTURE IN TUBERCULOSIS.

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The growth of tubercle bacilli on artificial media has always presented difficulties. Many methods have been advocated but have been too complicated to be of use in the ordinary work of a laboratory. Further, in animal experiments when tuberculous material has been injected into guinea-pigs, the animals may die from secondary infection or shock before the tubercle bacilli can establish their typical lesions.

Although cultures have been obtained from sputum and caseous material, bacilli have only rarely been grown from the blood stream. Recently, however, Löwenstein and Reitter have published[1] one of many instances in which they have successfully cultured tubercle bacilli from the blood, and since seeing their paper I have investigated cases of suspicious and established tuberculosis for the existence of a tuberculous bacillæmia. I have repeated Löwenstein's experiments, and in the following note I propose to give an account of the technique employed and of the results obtained.

Löwenstein's Egg Medium.

This medium offers but one difficulty in its preparation—that is, the exclusion of moulds and contaminating organisms. By slightly modifying Löwenstein's apparatus I suggest this shortened and simplified technique.

1. Three newly laid eggs are thoroughly cleansed with cotton-wool saturated in methylated spirit.
2. The top and bottom of each egg is pierced with a sterile scalpel, and pieces of the shell removed with sterile forceps, allowing the contents to fall into
3. A stout glass bottle containing 2 oz. of small glass beads. (It is essential that all glassware and instruments should be thoroughly sterile.)
4. A well-fitting stopper is inserted into the bottle and the contents are shaken by rotary movement for three or four minutes.
5. The egg mixture is transferred to a graduated cylinder and one-third of its volume of
6. 5 per cent. glycerin broth is added (pH 6·8).
7. By means of a separator 5 c.cm. of this mixture is run into test-tubes.
8. These tubes are inspissated at 84° C., and when the medium has set they are left to stand upright in racks.
9. To each tube 1 c.cm. of broth is added (pH 6·8) by means of a graduated pipette.
10. The test-tubes are capped and incubated for 48 hours.

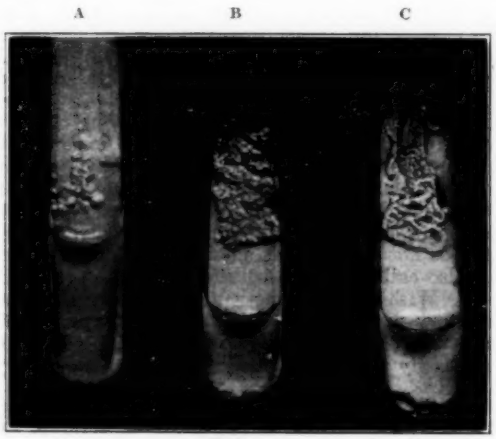
Tests of the Efficacy of the Medium.—Fourteen sputa were examined, in five of which tubercle bacilli were seen in direct smears, and these all grew colonies visible

[1] Löwenstein, E., and Reitter, O.: Münch. med. Woch., Feb. 13th, p. 261.

to the naked eye by the fourteenth day; of nine in which no tubercle bacilli were found in direct smears, one grew a pure culture in 17 days, eight remained sterile.

2 c.cm. of sputum were shaken with 10 c.cm. of 10 per cent. sulphuric acid in a stout glass test-tube containing five or six beads. After 20 minutes of occasional shaking, the emulsion was centrifuged and the supernatant fluid decanted. The remaining sediment consists of a layer of disintegrated lung tissue, and below this, a layer of amorphous debris. By means of a wide pipette the layer of lung tissue was transferred on to the egg medium (see Figure and tube A). By means of a large platinum loop the underlying layer of debris was inoculated in two other tubes (tubes B and C).

On the eighth and ninth days, although macroscopically there was no growth detectable, stained preparations showed massive colonisation. In the illustration tube A demonstrates how the lung



Three tubes showing growth of tubercle bacilli on Löwenstein's culture medium under conditions explained in the text.

tissues hinder the growth of the colonies, and tubes B and C show the freer growth from the amorphous debris.

In recovering organisms from urine sufficient urine is centrifuged to obtain 2 c.cm. of sediment, which is then shaken with 15 per cent. sulphuric acid. Lieberthal [2] reports on numerous cases in which, when using this medium, tubercle bacilli had grown on the tenth day, whereas with the old potato medium three to five weeks were required. Pus, cerebro-spinal fluid, and pathological tissues (the latter having been first pounded with 10 per cent. sulphuric acid) have all given pure cultures of tubercle bacilli on the egg medium.

Blood Culture.

Variations have been made in the technique for culturing the tubercle bacilli from the blood. The principles laid down by Lichtenstern [3] have mainly been followed.

Technique.—Under sterile conditions—

1. Mix 10 c.cm. of blood (obtained from a vein) with 3 c.cm. of 10 per cent. sodium citrate.
2. Centrifuge, decant the supernatant fluid.
3. Hæmolyse the red blood corpuscles with 5 per cent. acetic acid.
4. Centrifuge, discard the supernatant fluid.
5. Wash the sediment with distilled water and centrifuge (twice).
6. Decant supernatant fluid and transfer the whole of the deposit by means of a wide capillary pipette on to Löwenstein's egg medium.

Control Experiment.—A heavy suspension of human tubercle bacilli, obtained from a culture grown from sputum on this medium, was added to citrated blood and subsequently treated as above. Colonies were visible on the sixth day. This very early growth can be accounted for by the acclimatisation of the bacilli to their artificial medium.

So far, out of 11 cases under investigation, I have only succeeded once in a case of tuberculous bacillæmia in culturing the tubercle bacillus direct from the blood. The case was as follows:—

Male, aged 27, admitted April 5th, 1931, to the French Hospital under Dr. Campbell McClure. Clinical diagnosis: Bronchitis and pleurisy without effusion. Several smears from sputum, negative. Blood culture in trypsin broth, negative. Blood culture on egg medium gave growth of tubercle bacilli in 16 days. The blood, cerebro-spinal fluid, urine, and sputum were examined cytologically and by cultures with negative results. The patient is still under observation, and cultures on egg medium have been made from blood, urine, and sputum to check these results.[4]

I believe this to be the first case of tuberculous bacillæmia recorded in this country in which tubercle bacilli were found in cultures as early as the sixteenth day.

It seems possible that with this method of culturing tubercle bacilli from the blood many cases of undiagnosed pyrexia and doubtful skin lesions will be recognised as tuberculous, and that earlier diagnosis will be obtainable. It is maintained by most authorities that a bacillæmia is precedent to any localised tuberculous focus. Blood culture may make it possible to ascertain the presence of an active or quiescent tuberculous lesion.

I have to offer my thanks to the French Hospital, to Dr. E. ff. Creed, of King's College Hospital, for giving me every facility and encouragement in carrying out these investigations, and in particular to Dr. K. E. Eckenstein, honorary pathologist and physician to the French Hospital.

[2] Lieberthal, F.: Surg., Gyn., and Obst., 1930, l., 985.
[3] Lichtenstern, R.: Münch. med. Woch., March 20th, p. 471.

[4] Since writing the above a scanty growth of tubercle bacilli has been obtained from sputum which was incubated on April 16th. A diagnosis of tuberculous peritonitis has been established clinically, and it may therefore be concluded that the patient had a primary focus in the lung and that, during seven weeks of pyrexia (temperature 101° to 103° F.), a dissemination of the bacilli in the blood stream occurred.

CONSTITUTIONAL ANGIOHYPOTONY, OR IDIOPATHIC PERMANENT ARTERIO-HYPOTENSION.

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During the last 15 years there have appeared in the international medical literature a series of articles on a certain morbid condition that every author calls by a different name. The most important of these names are: hyposphyxy (Martinet, 1918), particular symptomatic triad (Vincent, 1918), arterial hypotony (Fritz Weiss, 1927), permanent arterial hypotension with an idiopathic course (Lian and Blondel, 1928), insufficiency of tension (A. Dumas, 1928), hypotension, (Garin, 1927, A. Strasser and W. Loewenstein, 1929), habitual hypotony (Jimenes Diaz), and low arterial tension and hypotony (Franz Kisch, 1929). One result of this multiplication of nomenclature has been that the identity of the phenomena described has escaped the observers. I was the first to describe this morbid picture, in a series of papers [6] beginning in August and September, 1903, when I gave it the name of "chronic arterio-hypotension," though later I preferred "constitutional angiohypotony."

The outstanding features of the condition I described were :—

(1) Signs of lack of tone in the arteries and veins without any corresponding lack in the heart, which in some patients and at some stages is over-excited.
(2) Severe disturbance in the blood-supply and nutrition of the organs, especially the nervous system, kidneys, and liver.
(3) Sclerosis in the walls of the vessels, indicating the dystrophy and intoxication caused in their metabolism by the hypotony.
(4) General weakness, often combined with attacks of hyper-excitability; fits of vertigo; accentuated first sound in the mitral area and accentuated second sound in the aortic area due to over-excitability of the myocardium; a tendency to displacement of the heart; acrocyanosis without general stasis; a tendency to visceroptosis; hæmorrhoids; oliguria; hæmaturia; albuminuria; and the passage of casts.
(5) General alteration in the appearance and indication of the influence of general angiohypotony on the development of the body and the general metabolism.

It is possible to confuse the diagnosis with mitral stenosis and mitral inefficiency. The morbid picture originates from abnormal constitutional conditions, depending on intoxications and infections that have acted either in utero or during the first years of life, exerting a secondary influence on the organs regulating the development of the body generally and of the vascular tissue in particular, especially of the adrenals, pituitary, and thyroid.

I recommended dietetic, balneological, climatic, and endocrine treatment to tone up and detoxicate the walls of the vessels and the whole organism.

This abnormality in the function of the blood-vessels can induce a vicious circle and disturb the whole organism, beginning with the heart. I regard it as a general and local biological disturbance and not as a simple mechanical trouble, and this interpretation has explained as angiohypotonic a number of syndromes previously described under different names, such as congenital heart disease, hypertrophy of the heart, irritable heart, neurasthenia of the heart, and "effort heart."

Pagès[1] wrote in 1929 :—

"en la matière le professeur A. Ferrannini n'a pas été seulement un précurseur, mais véritablement un novateur"; "il peut à bon droit en revendiquer la paternité"; "il s'agit d'une consécration trop tardive d'un exceptionnel mérite." "Peut-être pourrait-on le consacrer d'une façon plus éclatante en désignant le syndrome d'angiohypotonie du nom de syndrome de A. Ferrannini."

Subsequent descriptions of the syndrome do not differ from my original picture, although naturally, since I first wrote, clinical and endocrinological knowledge has greatly progressed, and later observers have had the opportunity of noting phenomena which the laboratory technique of the time did not allow me to mention in my first articles.

In August, 1903, I showed that patients suffering from constitutional angiohypotony have a functional insufficiency of the adrenal capsules and the sympathetic nerve-supply, as a symptom of endocrine disturbance. Before that time neither Sergent nor Vaquez had studied disorders of the sympathetic and adrenal systems in chronic vascular abnormalities. The injection of the adrenal hormone as a means of investigation has been employed by various investigators recently in a study of the functional condition of the vessels; I used this method in July and August, 1911.[2 3 4] Laignel-Lavastine's observations only date from 1908, five years after my first articles.

The term "angiohypotony" indicates that the disorder is primarily to be found in the walls of the vessels, rather than in the heart and defines that disorder as a lack of tone. "Hypotension" and "arterio-hypotension" do not explain whether the hypotony depends on the heart or on the vessels. There is undoubtedly a constitutional or congenital tendency, and quite a number of observers have preferred to use the word "constitutional" in their title for this condition. Bishop in 1904 wrote of "constitutional low tension," and Garan in 1907 described six cases of hypotension in one family. At the meeting of the Medical College of Vienna in November, 1928, H. Kahler pointed out the underlying constitutional abnormality and lack of vascular tone in cases of variable blood pressure and arterio-sclerosis in youth. Prof. Ludwig Braun,[5] writing under the title "Konstitution und Kreislauf," lays emphasis on the importance of the general constitution in circulatory abnormalities.

Certain difficulties arise in the recognition of this constitutional picture. The first is the clinician's habit of mind; he is so accustomed to regarding arterial hypotension as a result of myocardial insufficiency that he automatically looks to the heart whenever he meets a case. A patient with arterio-sclerosis may have his heart in excellent condition and yet have a very low tension in his vessels, as I showed 30 years ago when I had the privilege of converting Henry Huchard, the chief exponent of the view that it was impossible to have arterio-sclerosis without angiospasm. Another difficulty arises from the presupposition which accepts angio-spasm as a cause of hypertrophy of the myocardium but does not realise that enlargement of the vessels may also call for increased effort on the part of the heart. With modern instruments for clinical and laboratory work it is possible to bring experimental exactitude to studies at the bedside, and this difficulty ought easily to be overcome.

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CHRYSANTHEMUM DERMATITIS.

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THAT certain people are supersensitive to chrysanthemums is vaguely recognised by the profession, but not by horticulturists, and the condition is rare enough to be worth recording.

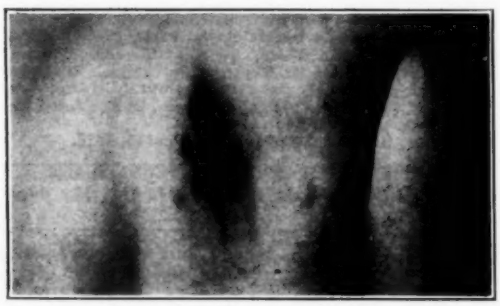
Case Record.

A market gardener, aged 54, gave the following history. Twenty-five years ago, after having worked amongst plants, including chrysanthemums in season, for seven years, he noticed outcrops of small pin-head vesicles on the backs of his hands and on his wrists after contact with chrysanthemums. This later changed to a dry erythema, and was very irritable. The next year (24 years ago) a patch of "eczema" occurred on his left forearm where the plants lay as he carried them; this spread to his face, which also became swollen. Since then, each year about October, similar lesions have appeared, becoming gradually worse each season. At first only some varieties of chrysanthemum affected him, notably those with the strongest smell, but more recently all varieties have had the same effect, and

latterly even the handling of the roots has been sufficient to bring on an attack.

Once, on the advice of a doctor, he obtained work where none of these plants was grown, and had no trouble, but on returning to chrysanthemums he relapsed. The present season's attack started in early October, 1930, on his hands and face, and then spread to his forearms and legs. Irritation was severe. No other plants are known to affect him, and no member of his family is similarly affected. He does not suffer from asthma or hay-fever.

He was admitted into the London Hospital under Dr. W. J. O'Donovan on Dec. 31st, 1930, when he presented the following picture. He was a well-built man, healthy apart from pyorrhœa alveolaris. The skin of his face was dry but no swelling was seen. His hands and forearms showed sheets of dry scaly lichenised papular erythema, with a few scattered relics of small furuncles. His legs were eyrthematous and excoriated on both shins. No other abnormalities were seen, and his blood count was normal except for a 10 per cent. eosinophilia; his blood pressure was 150/95 mm. His condition improved after the application of a 1/3 S.B. dose of X rays to all his lesions, and the administration of



Localised erythema produced by experimental application of a chrysanthemum leaf to the skin of the back for 24 hours.

protein shock with T.A.B. 1/8 c.cm. intravenously (300 million bacteria), which gave rise to a temporary pyrexia of 103° with a rigor. Locally, glycerin of lead lotion with acid carbol. liq. 1 in 60 eased the irritation.

To test the sensitivity of his skin, a piece of chrysanthemum leaf was strapped on to his upper arm for 24 hours, with a tulip leaf as a control. Leaves from the same plants, chrysanthemum and control, were also applied for a like period to the arms of two controls, one of them a patient with cheiropompholyx, who might, a priori, be expected to be supersensitive to external irritants. After 24 hours the market gardener showed a close-set vesicular eruption on an erythematous base on the exact area covered by the chrysanthemum leaf, and a scarcely noticeable erythema on the site of the control leaf. Neither of the two control subjects was affected by either leaf.

This leaf reaction was repeated on the patient with other control leaves on different skin areas with similar results. The one pictured was photographed approximately 72 hours after application. The lower surface of a leaf gave a much stronger reaction than the upper, and a petal similarly applied gave a local erythema without vesiculation. In each case the reaction developed into an area of dry, slightly scaly, crusted erythema similar to his original condition, without the lichenisation due to long-continued scratching. The lesions persisted as a scabbed erythema for over four weeks after contact. Three extracts were made from crushed chrysanthemum leaves, and were painted on to his skin. An alcoholic extract, and one made by soaking the leaves in normal saline for 24 hours, produced no skin reaction. An etheric extract, on the other hand, produced, after 24 hours, a slight erythema. His normal reaction time before the appearance of a rash was about 12 hours, this being accounted for by Smith [1] as the time taken by the irritant juices to penetrate the skin; it may, however, be merely the latent period to be observed in many exogenic skin affections (vide *Brit. Jour. Derm.*, 1920, xxxii., 223).

This reaction time can be influenced by X rays. A three-inch square was marked out on his back and subjected to a 1/3 S.B. dose, the surrounding skin being screened by a double layer of lead and rubber. Four days later, leaves were applied to this area and to adjacent normal skin. The reaction time was nearly doubled in both cases, and neither developed beyond a slight erythema with a few vesicles, the rayed area being slightly less marked. This experiment was repeated with the same result later. In no case did the reaction develop into the close-set vesicular eruption previously noted. From this it appears that the rays have at least a temporary effect upon the sensitiveness of the skin, both of the rayed area and of that surrounding it.

Discussion.

References to this condition, beyond mere mention, are not numerous. The London Hospital skin department has records of two cases, with photographs: one was a nurseryman in 1924, who had a dermatitis of his hands traceable to these plants; the other, in 1926, was a chrysanthemum specialist who for 15 years had an autumnal rash on his face described as a "sore, smarting, confluent erythema and thickening of the skin, with swelling round his eyes."

Prosser White [2] says that only certain chrysanthemums are irritant, and that these are used for making insect powders, the manufacture of which is sometimes attended by a mild dermatitis. Darier [3] also states that only certain varieties are irritant. Dawson [4] reports a case of a gardener on whose face an acute dermatitis appeared a few hours after contact with chrysanthemums, but which always cleared up over the week-end when he was away from work; his hands were never affected. Broers [5] states that chrysanthemum dermatitis was first reported by Howe in 1887 (I have not been able to trace this reference). He quotes Dawson's case in 1908, and says that in 1927 Kren noted a hypersensitivity in a woman of 34 who exhibited a rash on the exposed parts after contact with these plants. When the skin was rubbed with the flowers they caused no reaction, but the leaves and stems did. Kren thought that the small hairs to be found on the stalks and leaves were responsible, as the hairless varieties caused no rash; Broers's opinion is that the leaves and stalks give out a variety of essential oils, and that these are the cause of the inflammation. He says that *Chrysanthemum vulgare* gives out a brown-staining oil which consists of one of the terpenes or an isomeric modification of camphor, and has been used as an abortifacient; Lewin is said to have once seen a pustular rash caused by this oil. The petals contain pyrethrum-camphor, ethereal oils, and tannin.

McCord, Kilker, and Minster,[6] writing on "pyrethrum dermatitis" (pyrethrum being generally regarded now as a genus of chrysanthemum), say that insect powders are extensively made from both the pyrethrum and chrysanthemum, and have observed the following types of lesion in workers in these insect-powder factories: (*a*) a vesicular eruption—the commonest; (*b*) a quickly healing erythema on the exposed parts; (*c*) a papular dermatitis; (*d*) an anaphylactic type with reddening of the face and an erysipeloid rash.

They think that the dermatitis is caused by "pyrethrum," a neutral ester, and certain acids to be extracted from these plants, which are said to yield 13 per cent. of resinous substances and up to 30 per cent. of alcohol-ether extractives.

The Royal Botanical Gardens, Kew, fail to record any cases, nor have any cases been reported at a large firm of horticulturists (Messrs. Suttons, of Reading) where inquiries were made.

Chrysanthemums are classed botanically in the natural order "compositæ," a group of aromatic, stimulating, and carminative plants. Amongst those cultivated, of which there are many with widely differing characteristics, hairy varieties occur, and the leaves of the different species are said by Finnemore [7] to yield essential oils varying from 0·01 per cent. to 0·1 per cent., some of which are

used by the Japanese for medicinal purposes. There is an alkaloid "chrysanthemine" which is found to be a combination of stachydrine and choline, the latter being also found in the betel-nut. Different writers therefore agree that there are several possible sources of toxicity in the chrysanthemum. Smith [1] says, of plant dermatitis, that "any rough surface or prickles may abrade a delicate skin, and that almost any cell-sap may act as an irritant."

In the case recorded, which comes under the heading of McCord's type A but which differs clinically from Dawson's case and experimentally from that of Kren, it seems evident that the main factor in producing the dermatitis is chemical. The ether-soluble oils have been shown to be mildly irritant, and the varying but positive reactions obtained with the two surfaces of a leaf and with the petals, together with the history of irritation by the roots, is in accordance with this, owing to the relative permeability of the parts to the juices. This is further borne out by the patient's statement that the stronger-smelling varieties affected him first. The condition demands a skin abnormally sensitive to a specific irritant, which makes the probability of a mechanical irritant the more remote, as other hairy plants do not affect him.

The diagnosis of the condition, which may be of importance in compensation cases, should present no difficulty if a careful history be taken, especially of the relationship between the onset and work amongst the suspected plants. In doubtful cases a simple controlled leaf test, as indicated, should be conclusive.

Treatment in mild and recent cases consists of mild lotions, but those of longer standing may require drastic measures, as in the case recorded, avoidance of the source of irritation being, of course, essential.

My thanks are due to Dr. W. J. O'Donovan for his suggestions and permission to publish details of the case under his care; and to the director of the Royal Botanical Gardens, Kew, for having kindly supplied me with some of the botanical references.

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CLINICAL AND LABORATORY NOTES

THE MINIMAL FARADIC CURRENT AS AN AID TO DIAGNOSIS.

BY LIEUT.-COLONEL J. K. MCCONNEL, *D.S.O., M.C.*, C.S.M.M.G.,

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THE use of the faradic current for diagnostic purposes is well known in connexion with peripheral nerve lesions and with certain pathological conditions in muscles. The criterion in these cases is the muscular contraction, either by reason of its presence or its nature.

Besides this, faradic currents of weaker strength which do not elicit muscular contraction are of value in diagnosis, the sensations reported by the patient being the index. Unduly sensitive areas or spots may be located in muscles, fascia, ligaments, and joint capsules. As a rule these do not coincide with areas of tenderness to pressure, and where this is the case, the use of the minimal faradic current is of definite diagnostic value.

Spots unduly sensitive to faradism along the course of nerve trunks and hypersensitiveness at cutaneous levels may be of importance, but cannot be included within the compass of these notes.

TECHNIQUE.

The technique employed is similar to that which is well known in connexion with the localisation of spots suitable for galvanic acupuncture.[1] For the purposes under discussion, however, the testing electrode should be provided with a key, so as to differentiate between tenderness to deep pressure and sensitivity to weak currents, also as a check on the patient's replies. Usually the testing electrode should be of about 1·5 in. diameter, though a button electrode is required as well. Tests carried out before and during a course of treatment serve as a guide and check the progress at each stage.

CLINICAL VALUE.

The diagnostic use of minimal faradism falls under three principal headings: (1) the location of hypersensitive areas in recent and chronic trauma, especially in the back; (2) the discovery of certain areas from which pain is referred; (3) the differentiation between the origins of certain pains.

Characteristic examples of these have been found in patients treated under Dr. P. Bauwens in the Electrotherapeutic Department at St. Thomas's Hospital and in private practice. I am much indebted to Dr. Bauwens for permission to quote two of his cases.

1. *Recent or chronic trauma, especially in the back.*—When widespread tenderness to touch and extreme pain on movement is present or when localisation of tenderness to pressure is poor, the local treatment of small areas hypersensitive to faradism has been found to give marked relief.

Where residua of recent trauma exist, or when the site of origin of pain is hard to determine (either in subacute recent or chronic mild injury), minimal faradism fills a definite rôle, especially when tenderness to pressure is absent.

A case treated in the Electrotherapeutic Department at St. Thomas's Hospital demonstrates this point. A male, aged 40, had damaged his ankle whilst descending stairs some three months ago, during which time rest, fomentations, and physical treatment had been given. When seen there was no swelling and little tenderness, but the ankle ached on use. The external malleolus was not tender to pressure, but a spot (? in tibio-fibular ligament) was extremely sensitive to faradism; this was treated with a local dose of U.V.R.; three days later patient reported no pain in his ankle, though he had "tried it out."

2. *Referred pain.*—Pain may be referred from areas which are unduly sensitive to minimal faradism although normal or only very slightly tender to pressure. Cases of this have been found in the Electrotherapeutic Department at St. Thomas's Hospital and also in private practice. With certain patients the local treatment of such an area, which had previously remained unsuspected, gave a speedy relief from referred pain.

3. *Differentiation of origins of various pains.*—This difficult task is often facilitated by minimal faradism. Pain long ascribed to osteo-arthritic joints has been found to clear up when soft structures unduly sensitive

[1] E. P. Cumberbatch: Essentials of Medical Electricity, Sixth edition, London, 1929.

to faradism have been treated. The value of this electrical test will be appreciated by those who hold that this type of joint may cause referred pain only in certain acute phases.

Pain which appeared to be referred may be shown to be of local origin. This has been found as regards pain in the knee, around the ankle, and in the foot. The following case demonstrates this point.

Male, aged 55. Six weeks' history of pain in gluteal region, back of thigh, and in calf. Improved under physical treatment (diathermy, radiant heat, and acupuncture) during five months, but for a further six weeks pain in calf tended to persist. Test with minimal faradism disclosed sensitive spot above external malleolus, probably independent of original trouble. One local dose of U.V.R. (Kromayer lamp) cleared up this and residual leg pain.

PREVENTION AND ATTENUATION OF MEASLES WITH SERUM OF ADULTS.

BY MATTHEW BURN, *M.C.*, *M.M.*, F.R.C.P. EDIN., D.P.H., D.T.M. & H.,

CHIEF ASSISTANT MEDICAL OFFICER OF HEALTH, CITY OF BIRMINGHAM.

IT is felt desirable to publish the following results principally because of adult serum being used to carry out the prophylactic measures. Since this work was begun in October, 1930, supplies of serum have been derived from volunteers in the Public Health Department, Birmingham—mainly health visitors. It is to be noted that the serum is *not* from convalescent cases but from adults who have had measles, usually in infancy. As was to be expected, owing to the human origin of the serum, no anaphylactic or other serum phenomena occurred from its administration.

Suitable cases of measles are found through the agency of the health visitors, and any cases of contacts under 5 years of age who are in delicate health or who are either acutely ill or suffering from a chronic condition such as asthma, rickets, bronchitis, or who are in homes where there is grave overcrowding, are given the serum, after consultation with their medical attendant.

Sero-attenuation.

Number of cases.	Average incubation period (rash to rash).	Type of attack.
3	10 days.	Normal.*
20	11 days.	Mild.
33	12½ days.	Very mild.
14	—	No attack.
70	—	—

* One child, aged eight months, had rash for three days and mastoid operation 10 days later; grave overcrowding in house.
Mild = Where rash lasted two to three days, was faint, little catarrh and child well. Very mild = Temperature, and very faint sparse rash lasting about 24 hours; no bronchitis; child well during attack.

Sero-prevention.

Serum injected up to third day from rash.	Type of case.	Result.		
		Aborted.	"Failures."	
			Very mild.	Normal.
50	Hospital.	48	2	—
26	Home.	23	2	1

Above are tabulated the results of some 70 cases which received serum for attenuation purposes, their ages varying from a few months to five years. The day of administration of the serum varied from the fourth to the seventh day *from the appearance of the rash*, the average being 5·5 days. The dose of serum given varied according to the age of the child, its condition, and the day of administration, the average dosage being 8 c.cm. It will be seen that in reference to these cases, the incubation period cannot be considered to have been appreciably lengthened.

"*Failures.*"—Eleven contacts were injected in one ward on March 26th, 1931, but two previous cases of measles had occurred on the 21st and 25th, and in all probability these two "failures" were due to the double incubation periods which were "running" at the time. No further cases occurred.

Two of the three cases of "failure" at home had been exposed previously to measles which was prevalent in the court where they lived, while the third case inadvertently received 75 per cent. less than the recommended dose.

The average dose given to the above children, whose ages ranged from some months to six years, was 9 c.cm. These children were either post-operative cases or were suffering from some acute illness such as pneumonia.

From the experience above recorded it appears that the use of adult measles serum for either sero-prevention or attenuation gives comparable results to those obtained by other workers using convalescent measles serum. It is of course much more easily obtained.

NEW INVENTIONS

A MODIFICATION OF DESJARDIN'S FORCEPS.

HAVING been struck by the fact that the usual pattern of Desjardin's common duct forceps were smooth when closed, and presented some comparatively sharp corners on the blades when open, I have had a modification made to my own pattern. The

only difference in the new pattern is that all the projecting corners have been eliminated, the jaws being the same as to the gripping surfaces. When the forceps are applied to a stone, whether in the bile-ducts or the ureter, they cannot (as the old pattern could) injure the mucous membrane.

Messrs. Allen and Hanburys Ltd., 48, Wigmore-street, London, W., are the manufacturers.

C. E. KINDERSLEY, F.R.C.S. Eng.

CHARING CROSS HOSPITAL.—In his speech at the annual meeting of the governors recently, Mr. George Verity, who presided, said that, in spite of watching over every penny of expenditure, the hospital had for the moment lost its proud position as the lowest in cost per bed of all the London hospitals. Pay wards are needed, but they would have to be additional to the existing beds, and nothing can be done in that direction until the cost of the new nurses' home (£60,000) has been completely dealt with. Mr. Verity expressed a fear that the payment of nine months' income-tax next January would have a serious effect upon subscriptions.

MEDICAL SOCIETIES

TUBERCULOSIS ASSOCIATION.

AT a meeting of this association, held on May 15th, a paper on

Clinical Types of Hæmoptysis

was read by Dr. G. T. HEBERT. Although hæmoptysis was, he said, one of the outstanding features of tuberculosis, the actual method of its causation was still uncertain, and, probably for that reason, treatment of the symptom was far from satisfactory. Any classification of hæmoptysis should be made not on purely academic grounds but with the definite object of enabling any particular case to be placed in its group so that the appropriate remedy shown by experience to be of value in that group might be applied without loss of time. Among the clinical features of hæmoptysis was the fact that it occurred both in ulcerative and in non-ulcerative conditions, and that it might be due to one of a number of causes. The amount of blood also varied from the minimal amount sufficient to constitute hæmoptysis up to a pint or more, the size of the hæmoptysis having no necessary relation to the extent or activity of the disease. Other variable features were the frequency with which it occurred in different patients and the stage of disease at which it might present itself—early, intermediate, or advanced. Tuberculous hæmoptysis was of varying importance, some cases having apparently little significance as regarded prognosis. It was impossible to say which were the factors determining a hæmoptysis. Fatigue, effort, trauma, and rise of blood pressure had all been incriminated, but in many cases these could be definitely eliminated. With regard to rise of blood pressure, Dr. Hebert pointed out that it was doubtful whether a rise in the systemic circulation, unless prolonged, was followed by a rise in the pulmonary circulation. A review of these clinical features made it evident that hæmoptysis was essentially fortuitous; a number of different causes must be responsible. Although arterial bleeding undoubtedly occurred in vessels exposed in cavities, a severe ulcerative process had been at work in such cases, and in fact the arteries had proved to be the most resistant of all of the pulmonary structures. In cases of quiescent or calcified or apparently arrested disease, arterial hæmoptysis was difficult to explain, especially when the duration of the bleeding was short and no subsequent evidence of activity obtainable. Some cases of hæmoptysis in tuberculosis as in other non-tuberculous conditions might be caused by capillary or congestive bleeding, due to back pressure.

A SUGGESTED CLASSIFICATION.

After a brief review of some classifications of hæmoptysis already proposed by various workers, Dr. Hebert suggested that a rational division would be into (1) large and small (or brisk and sluggish), and (2) arterial and venous, with the four subdivisions: large arterial, small arterial, large venous, and small venous. The large venous hæmoptysis was the distinguishing feature of the classification, and he enumerated some of the arguments in its favour, showing also that on the clinical side it would account for cases of a large hæmoptysis occurring in an apparently healthy individual. The hypothesis assumed that when a perforation occurred in a vein blood would flow out rather than air enter. It was difficult to assess the probabilities of the occurrence of these two events from arguments based on intrapulmonary pressure, but it might perhaps be admitted that air would be sucked into a large vein, but a vein of smaller size, yet large enough to give a brisk flow of blood, might bleed. Dr. Hebert went on to show how the suggested classification would explain without difficulty the clinical features mentioned above, including hæmoptyses occurring at any stage of the disease. He then put forward a few general indications for assigning a given case of hæmoptysis to its proper group. A brisk hæmoptysis in an apparently healthy individual was probably a large venous; in a chronic case probably a large arterial. A small hæmoptysis in an active case should be regarded, and treated, as small arterial, but might be small venous if there had been previous evidence of pulmonary congestion. Finally, the speaker dealt briefly with the way in which the suggested classification might be applied to treatment. Large hæmoptyses required mental and physical rest, suitable posture, and, where the bleeding showed after 15 minutes no sign of cessation or appeared to be arterial, morphia might be indicated and the use of salt or calcium to increase the clotting power of the blood, and compression by artificia pneumothorax considered.

At the evening session a discussion on the

Surgical Treatment of Extrapleural Complications

in pulmonary tuberculosis was opened by Mr. P. H. MITCHINER. Very few non-pulmonary tuberculous lesions, he thought, called for surgical interference. In only three situations surgery was called for as primary treatment: (1) Tuberculosis of the kidney where the other kidney was healthy and there was no evidence of tuberculous disease elsewhere; (2) old tuberculous glands in the mesentery; (3) tuberculous glands in which abscesses had *just* broken down and the skin over them was perfectly healthy. It was worth while here to attempt to dissect out the gland whole. In regard to tuberculous bones and joints, no good was likely to be done if there was surgical interference when any pulmonary lesion was present. Sinuses must be kept aseptic; surgery was, of course, called for if sepsis had occurred, but in aseptic cases ultra-violet rays for superficial and X ray for deeper lesions were better than surgical treatment. He referred to Rollier's success with non-surgical methods, perfectly normal bones and joints being obtained in about four years. The ideal treatment was sun treatment when possible. Where time was an object, fixation by plaster-of-Paris was necessary. The most intractable type was primary synovial tuberculous disease of the joint. This might be cured in four to five years, but about 60 per cent. of patients would probably relapse.

Discussing the value of tuberculin in non-pulmonary tuberculosis, Mr. Mitchiner said he had found it of definite use in genito-urinary tuberculosis, but not in peritoneal, glandular, bone or joint tubercle. The commonest situation of non-pulmonary tuberculosis was in the cervical lymph glands. A search should immediately be instituted for a local source of infection. In addition to those generally recognised, he believed impetigo to be a potent source of tuberculous glands. He did not believe that any normal healthy lymph node could become tuberculous. General hygienic treatment was important, and

exposure to X rays was valuable if the patient could not be got away. With regard to surgery, it should be undertaken only when it was obvious that a broken down abscessed gland could be dissected out whole. If the skin was involved, he personally would leave it alone. If the resulting sinus had not healed up after three months, he always took an X ray photograph for the presence of any calcified tissue which would have to be removed. Neglected sinuses with superadded sepsis required thorough curetting of the track. In tuberculous peritonitis he was against surgical interference unless there was any intestinal obstruction.

Genito-urinary tuberculosis was of two types. The first was that of a patient who started with blood-borne renal lesions. These gave few signs in the early stage. The bladder was healthy, although the urine might contain many tubercle bacilli. Immediate removal of the diseased kidney should be undertaken, before the bladder, vesicles, prostate, and the other kidney were involved. The prognosis in such cases was good; about 70 per cent. of such patients operated on at St. Thomas's Hospital were still alive. The other type was where a patient with pulmonary disease had some secondary focus, however small, in the genito-urinary tract. No surgical interference whatever was justified in these cases; epididymal tuberculosis was always secondary to disease either of kidney or of lung. Fixation was important here; a suspender was not sufficient—the testicle must be strapped.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF LARYNGOLOGY AND OTOLOGY.

A MEETING of this section was held on April 17th, with Sir ROBERT WOODS, the President, in the chair.

Vallecular Dysphagia.

Dr. R. R. WOODS read notes on a condition—hitherto, he thought, undescribed—which he called vallecular dysphagia.

The patient, a man aged 54, first asked advice in June, 1930, complaining of 18 months' dysphagia. Solid food could not be taken with comfort; it stuck in his throat, and could be brought up by a kind of cough. Radiography showed that barium was held up in the valleculæ, and that when these were full the epiglottis was pressed against the pharyngeal wall so that breathing was impeded. On two occasions (February, 1930, and September, 1930) the floors of the valleculæ were burned by diathermy in an effort to cause cicatricial contraction and closure of the valleculæ. After each treatment he experienced great relief but the condition recurred. In February, 1931, the pharyngo-epiglottic folds were cut in an attempt to allow the food to pass more easily to the pyriform sinuses and thence to the œsophagus but this also gave only temporary relief.

The patient was now as bad as ever said Dr. Woods, and the question was whether palliative treatment by diathermy should be continued or whether some more radical treatment such as amputation of the epiglottis or an attempt to stitch it to the base of the tongue should be tried.

Dr. HORACE LAW suggested removal of the epiglottis in this case.—The PRESIDENT advocated the same procedure, through a suprahyoid pharyngotomy, and said he thought it a unique case.

Lateral Sinus Thrombosis.

Dr. T. O. GRAHAM showed two cases on which he had operated for lateral sinus thrombosis. In the first, since the diagnosis was obvious before operation, he had cut down and divided the jugular vein, and then cleared the large clot out of the lateral sinus. In the second case mastoidectomy had revealed an extradural abscess and lateral sinus thrombosis. Both were streptococcal.

Dr. PATRICK DEMPSEY advocated routine exposure of the lateral sinus in cases of simple mastoidectomy.—The PRESIDENT said that in his cases it had been the rule rather than the exception for an abscess to form in the deep tissues of the neck, around the divided ends of the jugular vein.

Dr. LAW reported a case of lateral sinus thrombosis with fatal termination.

The patient, a girl aged 18, was brought into the Adelaide Hospital on August 4th, 1930, suffering from pain in right ear and high fever. The attack had lasted only a fortnight; it was accompanied by grave constitutional disturbance. On examination acute tenderness and some swelling was found behind and above right ear; copious discharge was present, and acute inflammation of the drum was seen. There was no swelling over the mastoid, nor in the tissues of the neck, nor could the internal jugular vein be palpated. There was no sense of discomfort on deep pressure in the neck.

An ordinary radical mastoid was done, a large periosteal abscess was found, and cholesteomatous debris in the antrum and middle ear. Enough had been found to account for the high temperature and pain, and there was no indication to proceed further. However, three days later the patient had two rigors, and Dr. Law at once laid bare the lateral sinus over a large area, and found an abscess round it; the sinus was soft and showed no signs of thrombosis, and the condition of the neck was exactly as already described.

This interference seemed to make no difference in the condition of the patient, who still ran an extremely high temperature, going up most nights to 104° F. Injections of S.U.P. 36 and scarlatinal antitoxin were tried, but had no effect. Eleven days after the last operation the patient had another rigor, and her condition was so serious that Dr. Law decided to cut down on the jugular vein and see what the condition was. He opened the sinus above and it bled freely. The jugular vein was not easy to locate, for the tissues were extremely disintegrated and the vein itself very soft. It was opened and followed down right to the root of the neck and was found to be full of pus as far down as it could be followed. The wound was plugged and left open. A probe was passed up to meet another in the jugular bulb and proved this portion to be patent.

The local condition steadily improved, but the patient developed definite pulmonary symptoms and began to expectorate evil-smelling sputum. This went on to hæmorrhages, one of which proved fatal on Sept. 6th.

Intracranial Abscess.

Dr. LAW also described the case of a girl of 17, who was brought to the Adelaide Hospital on Nov. 21st, 1930, in an unconscious condition, having complained of pain and discharge in right ear.

The history was that she had had an acute otitis some days previously and then got rapidly worse and became unconscious on the morning of the 21st. Beyond the discharge from the ear it was not possible to make any definite diagnosis. Dr. Geoffrey Bewley saw the patient and found reflexes fairly normal and there were no gross eye signs. He did a lumbar puncture and withdrew 50 c.cm. of fluid, under pressure but quite clear. Dr. Law at once proceeded to open up the ear, doing a radical mastoid, laying bare the sinus and breaking down the tegmen tympani. In both the groove of the sinus and under the tegmen were found fairly large subdural abscesses. When the first one, that of the tegmen, was opened, the patient at once stopped breathing, though the heart remained strong and pulse regular. She was kept alive partly by artificial respiration and partly by intratracheal oxygen, and Dr. Law completed the operation leaving the area wide open. In various attempts to make her breathe use was made of oxygen, carbon dioxide, stimulants, strychnine gr. 1/10th, pituitrin and sterile saline intrathecally. These attempts were continued for four hours and the pulse remained good throughout. After that time, as there seemed to be no prospect of any natural respiration, the attempts were given up. Permission for necropsy was refused.

Dr. T. G. WILSON said that when respiration ceased in these circumstances a cerebellar abscess was usually present, and its evacuation was usually followed by restoration of respiration.

Dr. GEOFFREY BEWLEY said he did not think cessation of respiration was due to the lumbar puncture, notwithstanding the large amount of fluid drawn away. He thought some more serious intracranial trouble was present.

Mr. A. A. MCCONNELL suggested three methods of restoring respiration, which had proved successful with him in cases of cerebellar tumour. These were: changing the position of the head, from flexion to extension or vice versa; putting the patient into the Trendelenburg position; and opening the foramen magnum.—Dr. GRAHAM mentioned cases in which he had used similar methods with success.

Dr. WOODS read notes on a case of temporal lobe abscess.

The patient had had right chronic suppurative otitis media since boyhood. On Oct. 29th he vomited and had a temperature of 103° F.; there was no rigor, and the pulse-rate was 70. He was almost deaf in the right ear, but there was no mastoiditis. The nervous system was normal except for a suspicion of facial weakness on the left side. On Oct. 31st the radical mastoid operation was performed. There was a defect in the tegmen tympani. During the following week he became drowsy, the pulse fell to 60, and the facial weakness increased, and on Nov. 7th the temporal lobe was opened, a large abscess was evacuated, and the cavity syringed out. Drainage was maintained by a rubber tube, which was removed 11 weeks later. The ear is now dry.

Mr. MCCONNELL, referring to the fact that gas was present in the abscess cavity, advocated the use of X rays in diagnosis.

Dr. WILSON read notes on a case of temporal lobe abscess in a child aged 9 months.

This child was admitted to the Royal City of Dublin Hospital with acute left mastoiditis, and ptosis of the left upper eyelid. Fourteen days after simple mastoidectomy complete left oculomotor paralysis occurred, and twitching of the right arm and leg was noticed. The temporal lobe was freely exposed and the dura incised preparatory to exploring the temporal lobe next day, but the child died a few hours later. Post mortem an abscess pressing on the right crus cerebri was found.

Dr. WILSON drew attention to the preciseness with which it was possible to locate the abscess in this case and to the fact that no macroscopic track of infection was found, either at operation or post mortem. He also read notes on a case of perisinus abscess with purulent meningitis.

The patient, a farmer aged 26, was admitted to hospital almost comatose. Lumbar puncture yielded turbid fluid under pressure, from which the *Streptococcus hæmolyticus* was isolated. At operation a large perisinus abscess was evacuated. After operation the patient's pulse and temperature became normal, and 11 days later he was sitting up in bed reading newspapers. Next day an acute exacerbation of the meningitis took place, and proved rapidly fatal.

These cases were discussed by Dr. LAW and the PRESIDENT, who pointed out the importance of "twitchings" as an early sign of intracranial trouble in children.

Papilloma of the Vocal Cord.

Dr. P. J. KEOGH showed a case of papilloma of the right vocal cord. The patient, a man aged 34 years, complained of hoarseness and cough for five months previously. The Wassermann reaction was negative and no tubercle bacilli were found in the sputum. Dr. Keogh demonstrated a papillomatous swelling the size of a split pea in the middle of the right vocal cord. He proposed to remove this growth by direct laryngoscopy, but was prepared to do a laryngofissure if necessary.—The PRESIDENT and Dr. LAW expressed the opinion that the more radical method of removal might be necessary.

Dr. DEMPSEY showed a case of epithelioma of the fauces treated with diathermy. No recurrence had taken place after ten months, and the affected area was occupied by soft scar tissue.

ISCHÆMIA OF MUSCLE AS A CAUSE OF ANGINAL PAIN.

A LECTURE BY SIR THOMAS LEWIS.

THE St. Cyres Lecture was delivered by Sir Thomas Lewis at the National Hospital for Diseases of the Heart on May 14th, with Dr. Frederick Price in the chair.

Sir Thomas said that throughout his address he proposed to use the term "angina pectoris" in the sense employed by Heberden, denoting a distinct disease. He wished to consider only the origin of the pain in angina, and not the general pathology of the condition. Since the first description of angina pectoris by Heberden the cause of the pain with which it was associated had formed the basis of much theoretical discussion; the first person to suggest that the disease arose from an affection of the coronary arteries was Edward Jenner, and this view was later put more plainly by Parry. Parry recognised that the blood-supply to the heart muscle was impeded by the rigidity of arterio-sclerotic coronary vessels, and that though sufficient blood might pass to nourish the resting heart, the quantity might be inadequate for vigorous exertion. This theory, however, offered no explanation of anginal pain. He also believed that the power of the heart failed during the attack and that consequently "syncope anginosa" was a common symptom of angina pectoris. Subsequent observation, however, has shown that syncope is rare in anginal attacks. Allan Burns in 1809 was the first person to draw a comparison between angina pectoris and the condition of a limb "begirt by a ligature," but he made no mention of the pain in a limb working under conditions in which the blood flow was impeded. Benjamin Brodie, in 1846, compared cases of arterial disease in the leg, showing gangrene of the toes, with angina pectoris, but he, too, made no reference to pain. It was not until 1866 that Potter drew an analogy between intermittent claudication in a limb and the pain of angina pectoris.

Various experiments had been undertaken to decide where the pain arose in a ligatured limb. Some observers had attributed it to a spasm of the arterial walls, but Sir Thomas had found that when the blood-supply to a limb was cut off and the muscle exercised until pain developed, the release of the ligature produced flushing of the skin over the muscles with the first pulse beat, while the pain persisted for several seconds longer. Charcot, who had observed a patient with intermittent claudication, had attributed the pain to cramp which he thought comparable to cadaveric rigidity, but although the pain could be obtained readily by the exercise of a ligatured limb, true cramp was rare, and there was no increase in the tone of the muscles.

EXPERIMENTAL PRODUCTION OF PAIN.

To establish the pain Sir Thomas and his co-workers had gripped a small instrument which recorded the force used by means of a spring. The circulation was cut off by means of a sphygmomanometer, and the grip was tightened once a second in time to a metronome. They had found that the pain arose after 30 to 35 seconds and became unendurable after 72 to 78 seconds; these times were remarkably regular and did not vary much between different individuals. The pain was diffuse and aching, and situated in the neighbourhood of the acting groups of muscles; tenderness developed in

these muscles, which persisted after the pain had disappeared.

Pain had also been attributed to lack of oxygen in the muscle. Sir Thomas had found, however, that if the circulation was stopped in a limb kept at rest, no pain would arise. Moreover, if, with a ligatured limb the observer worked his muscles until he was within two or three contractions of the onset of pain and then stopped, no pain would develop. Yet in both these cases the muscles would be requiring oxygen, and the usual supply was not available.

Whether the load on the muscle or the rate of contraction was increased it was observed that the onset of pain and the point at which it became unbearable were expedited, so that the onset was clearly determined by the energy expended by the muscle. A clue to the origin of the pain had been obtained by a series of simple experiments. In the first of these the circulation had been cut off and the limb was worked until the pain had reached a certain level of intensity; work was then stopped, and it was found that as long as the ligature remained in place the pain persisted at the same level of intensity. When the ligature was removed the pain disappeared in from two to four seconds. For this reason, Sir Thomas said, he had concluded that the pain had a chemical or physicochemical origin; he believed that processes arose in the muscle-fibres during experiment which led to a change in the conditions in the tissue spaces around the fibres, and that it was the change in the tissue spaces which gave rise to the pain. Further experiments had helped to confirm this view; for example, when the ligature was released the pain disappeared within a few seconds; if, however, the ligature were replaced as soon as the pain had gone, and exercise was recommenced the onset of pain would be expedited. The shorter the rest interval the earlier the onset of pain, and it could be assumed that the process occurring in the muscle required longer to subside than the process arising in the tissue spaces. Another experiment bore this out; exercise was performed in a ligatured limb until pain arose; the ligature was then released but the exercise maintained until the pain disappeared, when the ligature was reapplied and the exercise stopped. It was found that pain developed again within 20 to 30 seconds, showing that some change had been engendered in the muscle which gave rise to the collection, in the tissue spaces, of the factor responsible for pain. So long as the circulation was free no collection of this physicochemical factor could arise, and therefore pain could not develop.

PAIN IN CORONARY THROMBOSIS.

If anginal pain was due to ischæmia then pain ought to arise either when the work of the muscle remained constant and the blood-supply was diminished, or else when the work of the muscle was increased and the blood-supply became inadequate. There were certain similarities between the pain produced in coronary thrombosis, where there was no increase of work but part of the blood-supply to the muscle was cut off, and the pain of angina pectoris. In both conditions pain was severe and continuous, not spasmodic, and the situation was the same in both, involving the præcordium and the upper and lower regions of the sternum. Epigastric pain was commoner in coronary thrombosis, and the pain persisted for a longer period than in angina. Coronary thrombosis offered the best clinical evidence that occlusion of a coronary vessel gave rise to pain. Sutton had borne out this finding by passing a ligature round the coronary vessels of anæsthetised dogs; traction on the ligatures when the dogs regained consciousness gave rise to pain, and he had not been able to elicit the symptom by experiments on neighbouring structures.

If coronary thrombosis were considered in terms of muscular ischæmia it would be realised that the part of the heart muscle supplied by the occluded vessel continued to work, heaping up the pain-producing factor in the tissue spaces. This would explain the gradual onset of the pain and its long duration.

EXCITING FACTORS.

The theory of anginal pain originally suggested by Parry had supposed it to be due to an increase of tension in a sore or irritable aorta, and in this case a rise of blood pressure should always precipitate an attack. In certain cases of paroxysmal tachycardia, associated with angina, however, there was no rise of blood pressure, but anginal pain might arise during the paroxysms; there could be no question of strain on the aorta here. Nor must it be assumed that in the angina of effort the pain was necessarily due to a rise in blood pressure unless this was confirmed by observation. In some cases where the patients had severe heart disease, usually aortic regurgitation, the early anginal attacks occurred on effort, but later they developed while the patient was in bed, often in the early hours of the morning; the rise in blood pressure in these cases was conspicuous, and the attack was usually relieved by inhaling amyl nitrite.

That changes in the blood pressure were not the only exciting cause of an attack could be shown by the case of a man who developed no pain after exercise but in whom attacks were readily induced by food, especially anything which required chewing. It was found that although the blood pressure rose slightly during the attack, it did not fall when the pain disappeared, and a much higher blood pressure was produced by exercise, though this did not provoke an attack.

Amyl nitrite was usually supposed to relieve an attack by causing a marked fall of blood pressure, but observations in the ward had shown that this was by no means always, or even often, the case. The fall, where it occurred, was usually slight, and in some cases the blood pressure actually rose. It was far more probable that amyl nitrite acted by dilating the coronary arteries; the consequent increased flow of blood to the heart muscle swept away the pain-producing factor from the tissue spaces. In coronary thrombosis, as might be expected, amyl nitrite gave no relief because it could not open up the occluded vessel.

HARROW HOSPITAL.—The Stuart Memorial extension of the Harrow and Wealdstone Hospital, which has been erected and equipped at a cost of nearly £38,000, was opened by the Duke and Duchess of York on May 6th. In reply to an address of welcome the Duke of York said that there could be no finer memorial than a hospital, and the descendants of the late Mr. and Mrs. J. N. Stuart would be glad that a name so closely linked with the hospital would ever be held in remembrance through the new extension. Mr. Stuart was a former president and secretary, and both he and Mrs. Stuart were generous in gifts and services. The hospital is electrified in almost every respect; no fireplaces or radiators are to be seen, all the heating being done by the wall panel system. There is a contributory scheme by which persons with incomes of less than £750 a year can secure hospital treatment in return for an annual subscription.

REVIEWS AND NOTICES OF BOOKS

A Handbook of Midwifery.

By RICHARD E. TOTTENHAM, M.D., D.P.H. Dub., F.R.C.P.I., Professor of Obstetrics and Gynæcology, University of Hong-Kong. London: J. and A. Churchill. 1931. Pp 305. 10*s*. 6*d*.

PRODUCTIONS emanating from the Rotunda Hospital usually have characteristics of their own. This one, by an ex-assistant Master, is but a small handbook written for students taking their obstetric course in a hospital and, possibly because of not aspiring to be anything more, has no differentia from others of its species. It is sound in its practice and management of obstetric complications and gives little ground for criticism on that score, but it is cast on traditional lines, indeed almost in the old-fashioned style, and is wholly lacking in inspiration and character. The impression it leaves is that students demand these pocket manuals and so the demand must be met. This granted, there comes the difficult problem of making such books useful agents in the education of the student, and it is from this aspect that the volume fails to satisfy.

It begins with a chapter on anatomy, quite adequate and containing the usual dry facts that must be memorised about the bony pelvis and its contents and about the fœtal head. The second chapter, covering normal pregnancy and antenatal conditions, is followed by three chapters on abnormal pregnancy; next come two chapters on normal labour, one on the physiology and one on the management, and five on abnormal labour. The last three chapters are on obstetrical operations, the puerperium, and the infant. Roughly three-quarters of the book are given to the abnormal and its management, and but one-quarter to the normal, a remarkable lack of proportion in these days, when it is generally accepted that the first lesson to be impressed on the novice is to seek physiology and ensue it. Indeed, it is impossible to discover the basis on which the writer determined what parts of his subject to put into the foreground and what into the background of his picture. He seems to have made a digest in miniature of the systematic text-book and attempted a bird's-eye view in a space so small as hopelessly to distort the perspective wherever detail is given.

A page is allotted to three theories of the causes of the onset of labour and six pages and seven illustrations to descriptions of rare forms of deformed pelves, such as greatly interested the obstetricians of some generations ago, most of which could well have been spared for expansion of the chapter on antenatal care and the excellent, but all too brief, account of the common uterine inertia and its management. The various conditions grouped under toxæmia of pregnancy are neither discussed in general nor in their relation to one another. The student can obtain no proper conception of the significance of albuminuria, for no reference is made to nephritis associated with pregnancy, and he would gather that the only danger is the rarer one of eclampsia rather than the much commoner risk of permanent renal damage. Here also occurs one of the few occasions when treatment in this book might be called in question, for when "albumin is present in considerable amount" a restricted diet and purging are mentioned, but the first essential—viz., that the woman should be put to bed—is reserved for "the pre-eclamptic state."

It is from the standpoint of the teacher rather than the clinician, and for the selection of its matter rather than the matter itself, that this book seems to us to fail to meet its purpose. But that is not to say that it may not prove acceptable to students, for, like children, they do not always know what is good for them.

Birth Injuries of the Child.

Second edition. By HUGO EHRENFEST, M.D., F.A.C.S., Assistant Professor of Obstetrics and Gynecology, Washington University. London: D. Appleton and Co. 1931. Pp. 317. 25*s*.

Prof. Ehrenfest's work, which appeared in 1922 as a unit of the Gynæcological and Obstetrical Monographs, represented the most comprehensive study of birth injuries which had been published, and has remained the standard work of reference on the subject. In the last nine years these lesions have attracted an ever-increasing amount of attention, and a wealth of new evidence has emerged from the work of various authors, in particular P. Schwartz and Bronson Crothers. In this volume the author has retained the form of the original monograph, but has greatly increased its size; he has rewritten the chapters on the nervous system and has made minor additions to the other chapters.

By far the largest section of the book is that devoted to intracranial injuries; its bibliography contains over 270 references. Prof. Ehrenfest is at pains to clear up the confusion which has arisen through the use of the term "intracranial hæmorrhage" in a general sense, without distinguishing between subdural, subarachnoid, or intracerebral hæmorrhage. He gives prominence to a fact which has been insufficiently recognised, that the findings recorded have depended to a large extent on the method of autopsy employed. The adoption of the Beneke method first revealed the frequency and importance of tentorial tears; records prior to its adoption are of little value in indicating the nature of the hæmorrhages. On the other hand, the adoption of the Beneke technique, without previous hardening of the severed head in formalin, failed to reveal the minute hæmorrhages convincingly demonstrated by Schwartz, and thus gave relatively undue prominence to tentorial lesions. Schwartz's observations are briefly described, and a general acceptance is given to his theory of suction-hæmorrhage; the relation of these findings to the question of a "physiological traumatisation" of birth, already propounded by Prof. Ehrenfest, is critically discussed. The views of a large number of obstetricians on the relative harmfulness of prolonged labour on the one hand and forceps delivery on the other are compared, and the author's reasons for preferring a conservative procedure are clearly stated. The chapter on injuries of the spinal cord has been enlarged to include the work of Bronson, Crothers, and Putnam. In the account of brachial birth-palsy attention is drawn to the frequency with which injury of the phrenic nerve has been recorded in recent years.

The volume contains a vast amount of material which will be of interest to the obstetrician, the pædiatrist, and the neurologist alike. The author's painstaking correlation of a mass of evidence has placed the subject of birth trauma on a more scientific basis than has hitherto been reached.

L'arthritisme: ses misères, ses dangers, son traitement.

By Dr. JACQUES SÉDILLOT, Ancien Interne des Hôpitaux de Paris. Paris: Librairie Louis Arnette. 1931. Pp. 496. Fr.80.

THE author of this book approaches the problem of arthritis from an unusual angle. Dr. Sédillot opens his book with a strenuous attack on the use of the word arthritis which, he says, should be condemned without appeal, since it means simply "articulation." He suggests instead either gout, acute, subacute, and chronic, or hepatism. It is difficult to see how either of these terms will advance our knowledge of the disease; to those who do not agree with Dr. Sédillot that arthritis and such associated conditions as asthma and migraine are the direct result of dysfunction of the liver, the term hepatism would certainly be unacceptable. Dr. Sédillot bases his treatment on the assumption that the liver is congested and functioning badly, and he attaches importance to the initial measurement of the size of the liver by means of a technique which he describes in detail. The success of treatment is gauged by the diminution in size of this organ. Equally important to his mind is the careful periodical examination of the urine. The book is not confined to the subject of arthritis, but includes discussions on a number of allied conditions which, in the author's view, are ætiologically related. Examples of these are diabetes, arterio-sclerosis, asthma, and eczema. Dr. Sédillot claims excellent results from his method of treatment, and those who wish to try it will find at the end of the book a clear account of the procedures.

The History of Medicine: A Short Synopsis.

By BERNARD DAWSON, M.D. Lond., F.R.C.S. Eng. London: H. K. Lewis and Co., Ltd. 1931. Pp. 160. 7*s*. 6*d*.

THIS small book, the price of which is high considering the size and format, consists of a series of lectures delivered to junior medical students in the Adelaide University. The author's intention to trace the influences of racial, political, and religious conditions upon the progress and development of medicine has been successful, and his audience of new recruits should have obtained from these simple and well-informed discourses a valuable outline of the ideals and performances of medicine. The illustrations assist the text.

Clinical Features of Heart Disease.

An Interpretation of the Mechanics of Diagnosis for Practitioners. Second edition. By LEROY CRUMMER, M.D., Professor of Medicine, University of Nebraska. New York: Paul B. Hoeber. 1930. Pp. 415. $4·00.

MANY clinicians believe that the pendulum has swung too far in the direction of the laboratory methods of diagnosis, especially in America. On the other hand, graphic methods have made a very valuable contribution to the advancement of knowledge in cardiology, a contribution which cannot be disregarded. They form an essential component both in the diagnosis and prognosis of heart disease at the present day. For this reason it is hardly conceivable that they should be ignored, but Dr. Crummer's book contains not a single illustration, either in the form of a graphic record or of a pathological specimen. So far as it goes the book is informative on orthodox lines, but it only goes half way. It reminds one of a blind man groping in the dark. His senses of touch and hearing may be more acute than those of his more fortunate colleagues, but he is painfully handicapped by the lack of one of his most important faculties.

Anæsthesia.

Modern Treatment Series. By W. S. SYKE, M.A., M.B. Leeds. With Section on Local Anæsthesia. By P. J. MOIR, M.B. Glasg., F.R.C.S. Eng. London: Jonathan Cape. 1931. Pp. 128. 5*s*.

THIS little book is well designed to teach the student the cardinal principles on which the art of giving anæsthetics is based. It is arranged in rather an unusual manner, but its somewhat jerky construction gives emphasis to the doctrines as they are rapped out. It is almost devoid of detail but detail can, of course, only be learned from practical experience. The author is an optimist in his account of tonsillectomy which he describes as taking one or two minutes. He might with advantage have given a little more guidance with regard to the management of the patient during a throat operation lasting, as removal of tonsils so often does, for half an hour or more. The banished status lymphaticus is, we notice, mentioned as a condition to be recognised as a warning before giving an anæsthetic. There is a useful note of a difficulty the cause of which often passes unrecognised when the abdominal muscles are outstretched in the Trendelenburg position.

Any student about to learn the giving of anæsthetics would gain great advantage from a careful reading of this small book, the printing and arrangement of which make the task an easy one.

The Anatomist and Other Plays.

By JAMES BRIDIE. London: Constable and Co. 1931. Pp. 183. 7*s*. 6*d*.

IN the three plays making up this volume Dr. Bridie shows the same qualities of originality, humour, and irony which were displayed in his previous volume containing The Switchback. The longest play in the volume, The Anatomist, is based on the life of Dr. Robert Knox the anatomist, who came so terribly into public notice in connexion with the Burke and Hare atrocities. Knox, as introduced by the dramatist, does not make exactly the same appearance as he does in the pages of authoritative biography, but Dr. Bridie's insight into character and motive make it quite likely that his presentation is accurate. The play was presented at the Lyceum Theatre, Edinburgh. The second play of the volume, Tobias and the Angel, has also met the public eye, for it was performed at the Festival Theatre, Cambridge, in November last. The well-known apocryphal story has always made a close appeal to artists, and Miss Stella Benson has made recently an admirable novel out of the old theme, the expatriated white Russians in Korea taking the place of the captive Hebrews. With Miss Benson the Jewish story is used as a motive for a modern drama, but the date of Dr. Bridie's play is that of the original, though the language and allusion are those of to-day and even of to-morrow. The play is a gay literary exploit. The third play, The Amazed Evangelist, is reprinted from *The Scots Magazine*; it is in one short act, and the space is insufficient in which to produce the sensations of amusement and terror intended.

Die Krankheiten des Stoffwechsels und ihre Behandlung.

By Prof. E. GRAFE, Direktor der Medizinischen und Nervenklinik der Universität Würzburg. Berlin: Julius Springer. 1931. Pp. 519. R.M.29.60.

IN this volume Prof. Grafe has covered metabolic disorders in all their aspects, but with particular regard to treatment. He has discussed the subject very thoroughly and has not allowed purely theoretical considerations to outweigh the practical problems of diagnosis and treatment. The recent literature is fully reviewed though the references are mainly to continental authorities. It is strange to find no reference to Garrod's work in the chapter on alcaptonuria and cystinuria. The chapter on gout is particularly full and gives an excellent and up-to-date survey of the subject. Over 200 pages are devoted to diabetes, in which the author has had a wide experience; full consideration is given to the views of different authorities on the subject. Prof. Grafe has little use for any of the insulin substitutes on the market for the treatment of diabetes and warns against their use except with special care and in special cases. Other chapters are headed Nature and Treatment of Nutritional Disorders, Obesity, Disorders of Protein Metabolism, and of Water Metabolism. The book supplies a full practical account of metabolic disorders.

Bacteriological Technique.

Third edition. By J. W. H. EYRE, M.D., M.S., F.R.S. Edin., Professor of Bacteriology in the University of London; Director of the Bacteriological Department of Guy's Hospital. London: Baillière, Tindall and Cox. 1930. Pp. 619. 21*s*.

WE welcome the reappearance of Prof. Eyre's well-known guide to laboratory bacteriological technique which has now been out of print for some time. The book does not appear to have undergone very marked alterations, and since its contents seem as fresh and modern as ever this is a tribute to its excellence. Amongst the newer material we find that pH methods are described as well as the author's method of medium standardisation, which latter served an earlier generation so well. The new methods, however great a sense of scientific accuracy they may convey, have done little to improve the utility of our culture media. Eyre's book is an old friend and an invaluable work of reference. It bears the stamp of personal experience, and contains clear accounts of certain methods—e.g., the bacterial examination of shell-fish—which are not described in many of its contemporaries.

Pathologie Médicale.

Tome III. *Maladies de l'appareil respiratoire.* By Dr. FERNAND BEZANÇON, Professeur de clinique médicale à la Falculté de Médecine de Paris; and S. I. DE JONG, Médecin des hôpitaux de Paris. In collaboration with Dr. ANDRÉ BLOCH, for Ear, Nose and Throat. Paris: Masson et Cie. 1931. Pp. 747. Fr.70.

THIS book is one of eight volumes dealing with the different systems of the body. The first chapter contains a brief description of the anatomy and physiology of the respiratory organs, and there follows a full account of diseases of the nose and larynx, including an interesting paragraph on hysterical conditions. The authors remark that great hopes of a cure for asthma arose when the anaphylactic theory of its origin was started, but these hopes have not been fulfilled, and many cases of asthma still resist any form of treatment. Under the heading acute infections of the lung, pneumonia, gangrene, and abscess are discussed. The account of the treatment of abscess is too brief, and the possibility of artificial pneumothorax treatment is mentioned without warning of its dangers. Most of the chapter on chronic infections is devoted to tuberculosis, but there is a short account of syphilis, new growths, and various non-tuberculous fibrotic conditions. In the chapter which deals with pleurisy is a full description of the different forms of pleural effusion and empyema. The last chapter is devoted to pneumothorax. A good index concludes the book.

These volumes are intended to take an intermediate place between the large treatise and the short synopsis, and the authors have well fulfilled this purpose by giving a brief clear account of the diseases of the chest.

Indian Medical Research Memoirs.

Memoir No. 18. December, 1930. Studies in the Parasitology of Malaria. By Lieut.-Colonel R. KNOWLES, I.M.S., and R. SENIOR WHITE, F.R.S.E., assisted by B. M. DAS GUPTA. Pp. 436. 19*s*. 8*d*.

IN this compendious volume the first 200 pages are largely concerned with the geographical distribution of the three malarial parasites. A satisfactory key is provided for the maps by small circles divided into three sections which show the relative proportion of infections with *Plasmodium falciparum*, *Plasmodium vivax*, and *Plasmodium malariæ*. The world distribution of malaria is limited by a summer mean isotherm of 60° F., that of *P. falciparum* by 70° F. *P. malariæ* is regarded as a dying species, with foci still remaining at the Burma-Yunnan frontier, the relics of Gondwana-land and the Caucasus. Mixed infections occur in 3·7 per cent. of all cases of malaria, and of these 79 per cent. are due to combined infections with *P. falciparum* and *P. vivax*. The authors believe that malignant tertian malaria does not usually persist in the absence of repeated fresh injections of sporozoites, and suggest that cases of malignant tertian seen in the tropics are freshly acquired infections whereas the majority of benign tertian infections represent relapses. Such factors as age, sex, and race are also considered. In general, the lighter the malaria incidence the later will the age-group be at which the majority of infections are encountered, and the longer the person lives in an endemic area the greater will be his chances of acquiring the disease. In India race makes little difference, though the type of house in which the person lives may markedly influence the chance of infection. Sex affects liability to infection only through the factor of occupation. In connexion with blood examinations the authors point out that the greatest difficulty facing the laboratory worker is preliminary quinine treatment, which, though insufficient to control the fever, makes it impossible to find parasites in thin films. Thick films are often more fruitful. The technique of blood examination is adequately considered and the limitation of methyl-alcohol as a fixative in the moist tropics is emphasised. The opinion is expressed that among experts a 95 per cent. agreement in diagnosis can be expected from five minutes' examination of a thin film.

A final chapter outlining problems awaiting investigation marks the conclusion that our present-day knowledge of malaria is remarkably meagre.

THE LANCET.

LONDON: SATURDAY, MAY 23, 1931.

HUGHLINGS JACKSON MEMORIAL.

FROM a letter which appears in another column it will be seen that a fund is being raised to establish a permanent memorial to HUGHLINGS JACKSON, and that its purpose is to provide an endowment for the Hughlings Jackson Lecture, which is delivered every third year by invitation before the Neurological Section of the Royal Society of Medicine. An honorarium, and probably a medal, will thus be available for future recipients of the invitation; the latter will furnish a tangible souvenir of their association with the pioneer whose memory neurologists the world over delight to honour. The response to the letter, which is signed by representative physicians, surgeons, and scientists, cannot fail to be gratifying, for with the passing of the years the place of HUGHLINGS JACKSON in the select company of those who make an epoch becomes ever more secure. Far ahead of his own era during his earlier period of more or less solitary research, content to reveal his observations and hypotheses to a comparatively limited audience, modestly estimating their intrinsic worth but ceaselessly urging the significance of his new approach to the basic problems of nervous disease, JACKSON laboured for no reward except the appreciation of those who understood its import, and was animated solely by the love of knowledge for knowledge' sake. Gradually but surely he became the neurologist's neurologist, and at length his fame spread widely among those who in other schools and countries were pursuing the same studies, and who were just as generous as his English confrères in voicing their tribute to his genius. Men so distinguished as GOWERS, FERRIER, and HORSLEY acknowledged the inspiration they derived from his writings, and from personal contact with his philosophic mind. To have been present at the National Hospital when his bust was unveiled in his own company, and when GOWERS eloquently stressed the almost unique character of the proceedings, was a memorable experience. Undeterred by a degree of physical feebleness, in his latter days JACKSON still imparted the rich stores of his knowledge and communicated some spark of his imaginative fires to younger men who sought his aid or were attracted by his reputation.

And now twenty years have elapsed since his death. A new generation has arisen and grown up, to whom he is merely a name; they perhaps can hardly realise the affection in which his memory is held by all who knew him intimately, nor can they appreciate how perusal of his works is illuminated when at the same time the accents of the man himself can be recalled. It is inevitable that a day will come when the Jacksonian tradition will no longer be personal but legendary, when his associates and students are gone and none can say what manner of man he was or convey to others an echo of a vanished mind. Impressed by the desirability of keeping his memory green, and sustained by the determination that the influence of his life-work shall in some degree be passed on to their successors, the signatories of the letter, who knew JACKSON in the flesh, invite all who are aware of the position which he holds in the history of neurology and of medicine to assist in securing the object which is so dear to their own hearts.

A YEAR'S INQUESTS.

THE newly issued [1] Criminal Statistics for 1929 throw light on the working of recent changes in the law of coroners' inquests. The amending Act of 1926, it will be recalled, made three substantial alterations. In the first place, Section 13 permitted the coroner to sit without a jury save in certain classes of cases of special interest or importance, thus developing a dispensation which had been found useful during the war-period in economising man-power. In 1929 there were 444 more non-jury inquests than in 1928, but the total of inquests with juries also rose in the same period; the coroner holds approximately five inquests without a jury for every three held with a jury. A second and more striking change in the law permitted the coroner to obtain information by means of a post-mortem examination, and thereupon, at his discretion, to certify the cause of death without necessarily proceeding to hold a formal inquest. The statistics show a steady growth in the adoption of this permissive dispensation. For 1927 (when the Act of 1926 was operative for eight months only) the figure was 3616; for the full year of 1928 it was 6791; for 1929 it is 7906. This last figure is roughly one-seventh of the total of deaths reported to the coroner from among the general population (i.e., excluding deaths in mental institutions); post-mortem examination was also directed or requested by the coroner in 11,468 out of 32,612 cases where an inquest was actually held. The Home Office inclines to view the increase in the substitution of post-mortem examinations for inquests with satisfaction, recording the fact that the number of towns "in which advantage is not taken of this simpler and more economical procedure" continues to fall. Not everyone, however, shares this official complacency. Dr. WALDO, for instance, has expressed in the City Coroner's Court his misgivings about this approach towards the secret system of inquiry into deaths which exists in France and Scotland. In particular he has commented on the result in connexion with the new Cremation Regulations whereby relatives can

[1] H.M. Stationery Office. Cmd. 3853. 3*s*. 6*d*.

obtain Certificate E on the strength of the post-mortem examination without inquest, under Section 21 of the 1926 Act. Such examination, as a safeguard in cremation cases, should, in Dr. WALDO'S opinion, never be made by the medical practitioner in attendance on the family, nor should it ever be conducted in a private house. The third main modification in the law is the provision in Section 20 of the Act for adjourning inquests when criminal proceedings in murder, manslaughter, or infanticide cases are under way in the magistrates' courts. The total of such adjournments in 1929 was almost the same as that for 1928.

Too many inferences must not be drawn from the Home Office statistics, least of all in items where the figures are small and subject to sharp fluctuations. Just as there is no special significance in the drop in treasure trove inquests from five to one in 12 months, so also no firm deduction can be safely made if the verdicts of deaths due to drink, or of deaths due to disease aggravated by other people's neglect, are twice as high for 1929 as for 1928. But undoubtedly the figures of verdicts of accidental death, which have been mounting by roughly 1000 per annum, reflect the dangers of modern traffic which the "Safety First" movement is endeavouring to reduce. The heavy drop in verdicts of death due to natural causes (including old age) can be explained by the new procedure, already mentioned, of substituting a post-mortem examination for an inquest. The total in this respect has fallen by about 5000 when compared with the total four years ago. Verdicts of stillbirth are dropping steadily; so also are verdicts of death due to want of attention at birth, and verdicts of accidental death where children have been suffocated while in bed with their parents or others. In one of the final paragraphs of the official Introduction to the Statistics it is stated that only one inquest out of 32,612 was followed by a second inquest on the order of the High Court. This fact the Home Office considers a remarkable testimony to the manner in which coroners and their juries perform their duties. It is a fitting tribute to the *officium coronatoris*, an office which, in the City Coroner's words, has throughout many centuries contributed in no small degree to the protection of the lives of our countrymen.

APICAL INFECTION OF THE TEETH.

WHEN the importance of dental sepsis as a factor in general disease was first emphasised by Dr. WILLIAM HUNTER, attention was chiefly concentrated on pyorrhœa as the obvious form of infection. But improved radiography often showed teeth with areas of rarefaction round the apices. Nearly always these teeth were pulpless, and when one of them was extracted a small mass of tissue, attached to the root and corresponding to the rarefied area seen in the radiogram, came away with the tooth. Though these masses of tissue, which are now termed granulomata, had long been familiar to the dental surgeon, and their structure had been studied, yet since the condition was usually painless, it had not been realised how common they were. The conception of dental sepsis had therefore to be widened by the inclusion of the granuloma. Since no drainage into the mouth was possible in this form of infection, the view was put forward, and soon became popular, that the granuloma was more serious than pyorrhœa, since the passage of toxins was directly into the blood, whereas in pyorrhœa the passage of toxins was chiefly into the mouth. The distinction between open and closed infection thus assumed great significance in connexion with systemic infection.

From this time onwards increasing interest has been taken in the bacteriology and histology of the dental granuloma. WESTON PRICE has suggested that it is a defensive barrier against infection arising in the tooth and may thus indeed indicate a successful reaction. This point of view has attracted much attention, for it has implied the possibility that "dead" teeth may not always need extraction. Some observers have reported that granulomata might be sometimes sterile, but often their technique has not inspired complete confidence in their conclusions. The most recent work on apical infection is contained in a series of four papers in the *British Dental Journal*[1] by Mr. ARTHUR BULLEID, which form by far the most exhaustive study yet made in this country, and represent an important advance in dental pathology. Mr. BULLEID has examined a large number of teeth which showed a granuloma radiographically. The teeth were extracted and cultures taken under strict precautions against contamination. Both aerobic and anaerobic methods of culture were used, and this proved highly desirable, for in eight cases granulomata which were sterile by aerobic methods showed a growth of streptococci on anaerobic culture. Bacterial infection was found in all 80 granulomata examined, and in every case streptococci were isolated, though other organisms were often present as well. A further interesting point revealed by this investigation is that granulomata are relatively common in pulpless teeth which have had their root canals carefully filled. It would be unfair to assume from this that treatment of pulpless teeth ought not to be undertaken, but it is at least possible that the principle of filling the canals up to the apex, which many dentists have regarded as fundamental, may have to be modified.

Besides his bacteriological work Mr. BULLEID has studied the minute structure of the granuloma and sets out his results in a series of microphotographs of high technical excellence. His research carries our knowledge a definite stage further, and should long be a standard for reference.

SMALL-POX PREVENTION AND LOCAL AUTHORITIES.

IN April of last year the administration of the Vaccination Acts passed from boards of guardians to local public health authorities, and like other duties thus transferred was left unamended. The

[1] Brit. Dent. Jour., Jan. 16th et seq.

Ministry of Health has now issued a review[1] of certain present aspects of small-pox prevention, to assist them in considering the necessity or otherwise of any modifications in the administration of these Acts. The review assesses the different factors in the epidemiology and clinical characters of small-pox which have been experienced in recent years, records the results and extent of vaccination and the incidence of small-pox in this country, and correlates this information with the findings of the Rolleston report and with the extension of the practice of other forms of immunisation against disease. This country, it is pointed out, is now and has long been intrinsically more vulnerable to the spread of severe epidemic small-pox than are European countries, like France and Germany, where the population is immunised compulsorily against small-pox by repeated vaccinations. On the other hand, the protective methods which are part of ordinary English administration, and include vaccination, have proved themselves on many occasions sufficient to prevent the development of epidemics of severe small-pox when introduced, either by extinguishing it at the start or by circumscribing the local epidemic which occurs and ultimately setting the community free of the results of the invasion. There is no reason, the review states, to expect that these will not be as efficacious in the future as in the past, but it demands vigilance not only from the local health authority but from the central authority which has to treat severe small-pox in the same way as other exotic diseases such as plague, cholera, or typhus, from the point of view of surveillance, if it is to be extinguished.

There are, however, modifications of procedure which may be considered by health authorities in any district invaded by the present type of mild small-pox. When small-pox first appears it is argued that the question of whether it is major or minor is of little consequence, seeing that the action required is in all respects identical for the two varieties. No effort should then be spared to notify, isolate, disinfect, vaccinate, and trace contacts, as is done when a severe type of disease has been imported from the continent. Happily any kind of small-pox control is favoured by the absence of ability to infect until the first symptoms of illness have occurred and by the possibility of immunising any contact if vaccinated within 48 hours of exposure to infection. Practically speaking, there is no "healthy carrier" problem in small-pox. But when this first stage has passed no authority need work on the principle of doing everything applicable in the case of a major small-pox epidemic. The question may arise whether the risk can justifiably be taken of allowing a patient to remain at home if he can be reasonably isolated there and all other occupants of the dwelling can be protected. Some feel that variola minor might be treated in an isolation block or in special wards of a general fever hospital whose staff is fully protected by vaccination. It is open to doubt whether public health authorities at present obtain as they might the coöperation of medical practitioners in the district. The issue to them of up-to-date clinical accounts of variola minor would have its advantages, and in return vaccine lymph might be supplied from the health office for immediate use in suspected cases, particularly now that a smaller area of vaccinated surface is officially advocated. Should procedure in these and other directions become more elastic there would, the report suggests, still remain one situation not included in present legislation for which compulsion would seem justified on every ground of preventive medicine. This is the case of the person, unprotected by recent vaccination or by previous small-pox, who is known to have been exposed to small-pox infection, at a time when his prompt vaccination will in all probability prevent the development of the disease.

In a brief summary the report indicates the kernel of this administrative position. Variola minor can usually be effectively and speedily extinguished on its first appearance in a district by the same methods as those applicable to variola major. When once it has taken hold the only workable procedure is to keep the disease under a reasonable degree of control, relying on its low infectivity and tendency to die out from an area in a few years. Such practicable control, in addition to insistence on prompt notification and provision of aid in diagnosis, includes hospital isolation, the tracing of direct contacts and offers of vaccination to them, as well as popular and unbiased education of the population on the safeguards which the individual can secure by vaccination against any variety of small-pox, and on the way in which he can obtain a vaccination with the minimum of inconvenience and risk. The report recognises that in this country at the present time it would be impracticable to secure a population so vaccinated as to render all other measures against small-pox redundant. It may be found by public health authorities that they derive little advantage from the Vaccination Acts that could not be obtained more satisfactorily if the Acts were replaced by voluntary measures. It would, of course, be out of the question to use the present machinery for maintaining protection at several stages of life by repetition of the one-mark vaccination. On the other hand, in its normal work of infant welfare the local authority is advising mothers on the general care of children and should more readily secure voluntary acceptance of vaccination. Public vaccinators would vaccinate as officers of the health department. The numerous occasions on which local authorities advise or influence adult communities on health questions could then be utilised. After they have observed the working of the Vaccination Acts under the new conditions the Ministry of Health looks to these authorities to formulate such proposals as seem to them desirable for preventing the spread of small-pox.

[1] Ministry of Health. Reports on Public Health and Medical Subjects. No. 62. A Review of Certain Present Aspects of Small-pox Prevention in relation particularly to the Vaccination Acts, 1867–1907. H.M. Stationery Office. 1931. Pp. 67. 1s.

ANNOTATIONS

NARCOTIC DRUGS AND THE LEAGUE OF NATIONS.

ON May 27th there will assemble at Geneva yet another international conference on the traffic in dangerous drugs. A draft convention, submitted by the Opium Advisory Committee of the League of Nations, will form the basis of discussion by the conference, while alternative plans favoured by certain nations will not be precluded from consideration. The draft convention purports to supplement the provisions of The Hague Opium Convention of 1912 and of the Geneva Convention which was elaborated, after lively discussions, only six years ago. The main problem to be solved is how to give practical effect to the provision (Article 9) of The Hague Convention, which required the contracting nations to limit exclusively to medical and legitimate purposes the manufacture, sale, and use of the alkaloids and their derivatives of the opium poppy, and the coca leaves, and to coöperate with a view to preventing their use for any other purpose. Although the Geneva Convention of 1925 was claimed to have strengthened and improved the original provisions of The Hague Convention of 1912, it was officially admitted that "during the next five years the illicit traffic assumed alarming proportions." While the Opium Advisory Committee appeared to be content to proceed under the Geneva Convention, the Assembly of the League, impressed by the disclosures in regard to the alarming extent of the illicit traffic, urged the need for directly limiting the manufacture of the narcotic drugs to the amounts required for medical and scientific purposes, and directed steps to be taken to implement the Geneva Convention to that end. The scheme implied the ascertainment of the annual world requirements, the quota to be allotted to each manufacturing country, and the appropriate distribution of supplies by some central organisation. A conference held in London last November failed to agree either on the principle or the amounts of the quotas, and postponed the question for further investigation. The advisory committee, with an enlarged membership to include non-manufacturing countries, has reported to the council on the present situation and on the draft convention which it has prepared for consideration, rejection, or amendment by the conference. In as much as objections have been raised by the Japanese, Turkish, and Yugo-Slav delegations, as well as by certain non-manufacturing countries, the conference bids fair to be an interesting one. While it appears, from a reply recently given in the House of Commons, that the limitation of production of raw opium and of coca leaves, the original sources of the drugs in question, is not regarded as relevant, it would seem impossible to exclude from consideration a question of such fundamental importance.

RADIOGRAPHY OF INTRACRANIAL BIRTH HÆMORRHAGE.

POST-MORTEM examination of the brains of newborn infants is well known to be difficult, and the only really satisfactory method is that in which the severed head is hardened in formalin. This, of course, is usually impracticable, at any rate in this country, but L. Schoenholz has devised a means of obtaining radiological evidence of intracranial hæmorrhage in cases where autopsy is not permitted. Both jugular veins are severed, and a mixture containing gelatin and red lead is injected into one of them until it appears in the other. Stereoscopic radiograms are then made, and have been held to localise the hæmorrhages accurately. Dr. F. M. B. Allen and Dr. H. I. McClure,[1] of Belfast, now describe a method which they have adopted, and reproduce radiograms which are said to demonstrate intracranial birth hæmorrhages. The opaque solution which they used was röntyum, which has the advantage that it does not gravitate. The röntyum was injected into the carotids or umbilical vessels, and the radiograms show that it penetrates the small arterioles; they also make it clear that there have been extravasations from the vascular system. Allen and McClure seem to deduce from this that arterial hæmorrhage is met with in the new-born—a supposition which must be received with great caution, since it is unsupported by the mass of evidence derived from examination of hardened brains. Similar results were obtained in 1929 by M. H. Roberts by a somewhat different method, and Prof. H. Ehrenfest, in his authoritative work on "Birth Injuries of the Child" (1931), makes the following comments on Roberts's results: "Roberts, however, in an endeavour to improve upon Schoenholz's technic, substituted metallic mercury as an injection fluid, incidentally forgetting that intracranial hæmorrhages practically without exception originate from veins. He injected this heavy metal into the carotid arteries, and believes that his very clear roentgenograms actually show intracranial hæmorrhages, although it is more reasonably assumed that they only represent artefacts resulting from the injection of this heavy substance into the notoriously fragile vessels of the brain." Though the solution used by Allen and McClure has advantages over metallic mercury, Prof. Ehrenfest's comments probably apply with equal cogency to the results they describe. Further, the radiographic demonstration of *apparent* arterial hæmorrhages raises a measure of doubt whether extravasations revealed by injection of the venous system really correspond to ante-mortem hæmorrhages.

DISCOUNT BY DENTISTS.

Sir Francis Dyke Acland, prevented by illness from opening in person the twentieth session of the Dental Board of the United Kingdom on May 12th, sent an unusually racy presidential address which was read by Sir Holburt Waring. After commenting on the unbelievable size of dental announcements in Glasgow which he had made a special journey to inspect—in many cases they were, he said, larger than most tradesmen in most towns would consider self-respecting—he warned dentists against directory touts and went on to consider whether it is proper for dentists to give commission or discount to, or in connexion with the treatment of, any particular class of persons. The question had lately been raised in slightly differing forms in connexion with the Benevolent and Orphan Fund of the National Union of Teachers, the Irish Bank Officials Guild, the Marine Engineers Association, the Sheffield Civil Service Guild, and Co-operative Societies at Kidderminster and Ynysybwl. "It may be useful," said Sir Francis, "if I summarise, in the form of a simple working rule for the profession to observe, what has been our

[1] Arch. of Dis. in Childhood, April, 1931, p. 97.

view since the question first came up. We express it habitually when our advice is asked in individual cases, but I cannot remember whether it has previously been publicly stated. May I put it in this way: When it is suggested to a dentist that he should allow a discount from his usual fees, let him ask himself this question. 'Can I prove without any question that this discount is simply a discount for cash and fairly represents my saving in trouble and expense in collecting my accounts? If not, I had much better have nothing to do with it.' This is a simple rule to follow, and I believe it to be perfectly sound and justifiable, for our experience shows that there are only two classes of discounts, one the discount for cash, and the other the discount for the introduction of patients. The second may be variously and sometimes heavily disguised, but on examination always appears as the underlying motive, and to give commission for the introduction of patients is clearly a wrong thing to do between man and man." Sir Francis added that it was also, of course, one of the matters which might cause difficulty for a practitioner with the Board, for it was specifically covered in the words of the Important Notice: "The Board do not approve of a dental practitioner paying, or allowing, a commission or discount to any other person or body of persons as a return for patients being sent or recommended to him, or for dental services rendered by him to such patients."

AVERTIN AND "RINAROM."

WRITING with an experience of 1200 cases of avertin narcosis Max Wülfing,[1] who has used the drug for four years, shows himself one of its staunch supporters. Like most others, he has given up trying to get true anæsthesia with avertin alone, but he finds that the drug does in fact produce it in a small proportion of cases. Employing a dose of from 0·06 to 0·1 g. per kg. body-weight—except in children for whom he uses the higher dosage of 0·15 g.—he always obtains perfect amnesia, and usually unconsciousness before any additional anæsthetic is administered. This additional anæsthetic he supplies in the form of a mixture of ether (12 parts), chloroform (1 part), and ethyl chloride (2 parts) with a balsam perfume, and he gives it from an Ombrédanne mask. The additional CO_2 necessarily inhaled by the use of this instrument he values for its stimulant effect on the respiratory centre, and he finds that pulmonary complications are rare and trivial. The mixture evokes, of course, less mucous secretion than pure ether. It goes by the name of Rinarom.

AXEL HOLST.

THE death of Prof. Axel Holst, full of years and honours, removes the man who probably ranked higher than any other living Norwegian in the world of medical science. His associates had, indeed, hoped that his pioneer work on scurvy and beri-beri would have won him the Nobel prize. Between 1904 and 1910, with the help of his assistant, Frölich (now Prof. Frölich), Holst examined the evidence of the then common belief that beri-beri and scurvy are caused by an infection or some other poison existing in foods supposed to have become contaminated. Feeding tests on fowls and guinea-pigs showed that their response to a diet of polished rice was not one and the same, the guinea-pigs developing symptoms similar to those of human scurvy, while fowls developed polyneuritis. It was also found that scurvy could be produced in swine by feeding with rye bread, or rye bread plus cooked beef, or rice and dried cooked fish. Most of the swine thus tested also developed polyneuritis, and Holst and Frölich came to the conclusion that this combination of the symptoms of beri-beri and scurvy must be identical with the symptom-complex known as "ship beri-beri." During the last seven or eight years of his life, Holst made extensive investigations into the ætiology of pernicious anæmia, a summary of which we published on Feb. 7th. His studies of scurvy, beri-beri, and pernicious anæmia, constituted only a small fraction of his activities; he played an important part in housing, sanitation, medical education, and many other departments. He used often to classify his fellow beings as Yes-persons and No-persons. He was essentially a Yes-person himself. Overcharged with intellectual electricity, he could be relied on to provide a shower of sparks on coming in contact with kindred minds, and his interests were so wide that their number was great.

[1] Med. Klinik, May 1st, p. 655.

TUBERCLE BACILLI IN THE BLOOD.

Prof. Otto Kren and Prof. E. Löwenstein have made further progress [1] in the elucidation of cutaneous lesions of suspected tuberculous origin. Their work is based on the production by Löwenstein of a new culture medium for the tubercle bacillus, announced at the International Dermatological Congress held at Copenhagen in August last. It was there reported that of the 44 cases examined no less than 33 (or 75 per cent.) yielded positive blood cultures—a result which is the more surprising when it is realised that the laboratory workers were uninformed of the clinical nature of the cases from which blood had been withdrawn, and were even unaware which were submitted as controls and which were to be tested for cultural evidence of active tuberculosis in the circulation. An additional 22 cases in the present communication brings the total up to 66, which may be tabulated thus:—

	Total.	Pos.	Neg.
Erythema induratum (Bazin) and tuberculous phlebitis	23	16	7
Papulonecrotic tuberculide	4	4	—
Acne telangiectodes	4	2	2
Granuloma annulare	3	1	2
Lupoid	1	1	—
Scrofuloderma	3	2	1
Miliary tuberculous ulcer	1	—	1
Lupus vulgaris	10	5	5
Lupus erythematosus	17	10	7
Total	66	41 (62%)	25 (38%)

There was a striking difference between the proportion of positive results obtained on a first examination in the spring (100 per cent. positive), summer (75 per cent.), and autumn (62 per cent.), which the authors interpret as a seasonal variation in the quality of the blood. Summarising the results so far obtained they conclude that every suspect case of tuberculosis cutis (and this may well include other forms of tuberculosis met with in practice) should be submitted to cultural tests, which in their opinion are more reliable than complement fixation, agglutination, or precipitation tests, and which can be carried out in 4–5 weeks as compared with the 6–12 months of guinea-pig experiment. Reaction tests, such as those of Pirquet and Mantoux, do not tell us, in the event of a positive result, whether the focus is active, latent, or eradicated. A positive cultural

[1] Wien. Klin. Woch., March, 1931, p. 405.

result, on the other hand, affords definite evidence which is not easy to explain away. The absence of such evidence in clinically obvious tuberculous cases would depend, according to the Viennese authors, on the evolutionary phase of the lesion, whether it is in fact "open" or "closed," as in a certain proportion of cases of lupus vulgaris, erythema induratum, and granuloma annulare. That 10 out of 17 cases of lupus erythematosus should yield positive results supports the tuberculous ætiology of this affection. Löwenstein's technique for the preparation and inoculation of blood specimens introduces a new principle in bacterial culture. He maintains that hæmoglobin is inhibitory to the growth of the tubercle bacillus, and that its presence in earlier cultural experiments explains the large percentage of negative results.[2]

Ten cubic centimetres of blood are drawn into 3 c.cm. of 10 per cent. sodium citrate and centrifugalised. The plasma is drawn off and the blood-cells are hæmolysed with acetic acid; 15 per cent. sulphuric acid is added, and the mixture thoroughly shaken for five minutes. After washing out the acid with sterile water several times, the whole sediment is floated on to the culture medium, and the tubes incubated in the usual way. The culture medium itself is by no means easy to prepare. It contains in various proportions egg albumin, potato flour, asparagin, glycerin, potassium phosphate, and magnesium sulphate, and to this complex mixture a 2 per cent. solution of Congo-red is added before filtration and sterilisation, as for Löffler's serum. The inventor, who has been working on his subject since 1905, states that peptone should never be used if good results are to be obtained.

One difficulty in preparing Löwenstein's medium is the exclusion of moulds and contaminating organisms. On another page of our present issue Dr. H. M. Schwabacher describes a shorter and simpler way of preparing this medium, by means of which she has obtained a culture of tubercle bacilli from the blood recognisable as such on the sixteenth day. Dr. Schwabacher agrees with R. Russew,[3] who has worked in Löwenstein's clinic, in expecting the method to discover the tuberculous origin of many doubtful skin lesions.

ATTENDANCE OF HONORARY HOSPITAL STAFF AT INQUESTS.

IT is the sensible practice of coroners, when investigating hospital deaths, to be content in ordinary cases with the evidence of the house surgeon and to refrain from summoning members of the honorary staff. A correspondent has lately asked what is the authority for this practice. The answer is that it is founded upon reason and on the desire of coroners not to make their proceedings vexatious. No class of witnesses, of course, can claim exemption from attendance at an inquest; the coroner must always obtain the proper evidence which his court requires. But, unless in exceptional cases, the evidence of the house surgeon suffices. There is neither statutory nor judicial authority on the point, but the practice received some confirmation through an incident at Oxford, over 50 years ago, summarised in our columns at the time and perhaps worth rescuing from oblivion to-day. Edward Law Hussey, surgeon to the Radcliffe Infirmary from 1850 to 1878, became coroner for Oxford city in 1877 and did good work in that capacity. He was, however, a man of unaccommodating temper. At the end of 1878 he held an inquest on a labourer whose leg had been crushed in a threshing machine and who had died in the infirmary of exhaustion after amputation of the limb. Hussey had been informed of the death merely because the patient had been admitted in consequence of the accidental injury. An experienced house surgeon, who had apparently seen the patient on admission, and who was the last medical officer to see him before his death, was available as a witness but was not subpœnaed. Hussey preferred to summon his former colleague, Horatio Symonds, who had performed the amputation. Symonds wrote a polite note to the coroner saying that he had an appointment elsewhere at the day and hour mentioned, but that the house surgeon would be able to give all necessary information. Hussey replied that, if Symonds did not attend, process would be issued against him. The day of the inquest came and Symonds did not appear; Hussey adjourned for two days and issued a warrant for Symonds's arrest. The explanation given to the jury was that evidence from the operating surgeon was required in order to decide whether the operation was necessary. The foreman of the jury agreed and said the witness should attend so that the jury could ascertain whether the patient was fit to undergo the operation. One can imagine the chaos which would ensue if the propriety of every serious operation were to be referred to a coroner's jury when death followed. At the adjourned inquest Symonds appeared in the custody of the police, but his counsel succeeded in persuading the coroner to order his release. A few weeks later another death in the infirmary was reported, a man having broken his back through falling from a wagon. Hussey again summoned Symonds, instead of the house surgeon, to give evidence at the inquest where there was apparently some altercation which did not enhance the dignity of the proceedings. Symonds began an action against the coroner in respect of the circumstances of his arrest. According to Victor Plarr's account of Hussey in the Lives of Fellows of the Royal College of Surgeons, Symonds also appealed to the Home Office and managed to obtain a ruling that it was sufficient in ordinary cases that the house surgeon should attend an inquest to give evidence. Nice questions of law might have arisen had the action proceeded. As he is the judge of a "court of record," a coroner is immune from actions for trespass for turning a man out of his court or for slander in a summing-up; but he may be liable in an action for false imprisonment if he has acted in excess of his jurisdiction. Hussey settled the action by making an ample apology to Symonds (published in the *Oxford Times* during February, 1879) and paying £20 towards his preliminary legal expenses, which sum Symonds forthwith gave to the infirmary. As we observed at the time, Symonds deserved the thanks of the profession for his bold resistance to a vexatious innovation.

The incident is hardly likely to recur. If it does, a word of warning should perhaps be given. A coroner's summons is not to be ignored by the honorary surgeon of a hospital merely because it is vexatious; some other solution should be sought than flat disobedience. The coroner has three different powers of enforcing his requirement of attendance. Under Section 19 of the Coroners Act of 1887 he can summarily impose upon any person who fails to appear after being duly summoned a fine of 40*s.* which in 1926 was increased to £5. This section is taken to include medical witnesses, though Section 23 gives the coroner the special power to prosecute a medical practitioner who fails to obey a summons. Under Section 23 the practitioner, unless he shows good and sufficient cause for not having

[2] Deut. Med. Woch., 1930, lvi., 1010.
[3] See THE LANCET, 1930, ii., 200.

obeyed the summons, may be fined £5 by the magistrates; this section, however, is the less likely to be used because the coroner would prefer to impose the fine himself directly under Section 19 rather than undertake a prosecution under Section 23 on the issue whether there was "good and sufficient cause," especially as the issue would be for the magistrates and not the coroner to decide. Thirdly and finally, the coroner's inherent power of punishing defaulting witnesses by fine or imprisonment as for a contempt of court is expressly preserved in the Coroners Act as an alternative to the statutory fines under Sections 19 and 23. The risk of disobedience, therefore, is by no means limited to a maximum of £5, though it is hard to imagine the circumstances in which a coroner would have recourse to such powers against a medical practitioner.

AN EXPLOSION AT OPERATION.

THE latest reported instance of explosion at an operation does not seem to present any fresh problem in connexion with this accident or to show any unsuspected dangers which may occasion it. The inflammable nature of the anæsthetic vapours used is not in doubt, for ether had been inhaled a little time before, although it was not being taken at the time of the explosion; but the exact manner in which they were detonated is here uncertain as it has often been before. No actual cautery or open flame was brought into contact with inflammable vapours, but merely an electric "pencil-lamp." Defective contact is suggested as the explanation for the exploding spark, but it is permissible to wonder whether a mere lamp, if sufficiently hot, cannot cause explosion of a mixture of oxygen and ether, supposing this to be in its most susceptible proportions. In other cases, notably in that most recently reported[1] from across the Atlantic, there is the same difficulty of accounting for the presumed spark. There was an explosion of nitrous oxide, ether and oxygen, and static electricity was the assigned explanation. This explosion was a violent one and the patient died outright. In the Birmingham case the explosion was less and the patient died only some days afterwards from putrid bronchitis. Prof. Haswell Wilson, who made the post-mortem examination, said that the appearances suggested that the flame had been transmitted down the bronchial tree. The facts, as we gather them from the press reports, are briefly these: A fitter, aged 60, was admitted to the General Hospital, Birmingham, for a second operation for cancer of the œsophagus. During March he had been in the hospital, and the growth being regarded as inoperable, radium had been inserted. He returned to the hospital on April 14th and on the 15th he was taken to the operating theatre in order that some dilatation might be attempted, since only the thinnest liquids could be swallowed. The surgeon used a pencil light with current derived from an accumulator. The explosion occurred while he held the pencil in the patient's mouth. It was, he said, deafening and upset his hearing for the rest of the day. It appeared to start in the apparatus, which went up to the ceiling. His own hair was singed and the side of his face burned. The damage in the patient's throat was caused by the explosion, not by any instrument. The anæsthetic had been first a mixture of chloroform and ether, then ether, and later, chloroform only. It was stated by experts that the lamp could have caused an ignition by fracture of the glass or by a spark occurring in the lamp socket, owing to the slackness of the bulb. Mr. Smithles, of the research department of the General Electric Company, said that the type of bulb used in the pencil lamp was not advocated for medical or surgical use. The lamp in its present condition was dangerous for use with an explosive mixture.

[1] Canad. Med. Assoc. Jour., April, 1931.

HOSPITAL ENTRANCE SCHOLARSHIPS.

THE medical schools of Guy's and St. Thomas's Hospitals, and the medical college of St. Bartholomew's Hospital have recently had under consideration the methods of award of university entrance scholarships, and are unanimously of opinion that, in the interests of medicine, scientific merit and attainments should be the determining factors. They have therefore agreed that their university entrance scholarships shall be awarded as a result of open competitive examination, and they have arranged to hold a common examination for the purpose. Each school offers annually a scholarship of £100 and an exhibition of £60, and the scholarships and exhibitions will be awarded by the deans of the three schools sitting in conference, after receiving reports from the examiners. The scheme will come into operation in July, 1932, when the examination will be held at St. Thomas's Hospital Medical School. Thereafter, the examination will be held at each of the schools in rotation. Candidates will, of course, be entitled to express their preference for any particular school and the stated preference will be taken into consideration when the scholarships are awarded. The scholarships will be open to students who have completed their examinations in anatomy and physiology in a British school or university outside the London metropolitan area.

ENDEMIC ERGOTISM.

Dr. Julius Kaunitz[1] points out that epidemic ergotism has been almost extinct since the end of the last century, owing to the more careful cleaning of the rye seed before planting and milling, and the long period of storage of the grain whereby the toxicity of ergot decreases. It has occurred to him, however, that some of the vaso-motor and trophic diseases such as thrombo-angiitis obliterans, Raynaud's disease, erythromelalgia, scleroderma, sclerodactylia, and dermatomyositis, may possibly be due to endemic ergotism. In investigating cases of thrombo-angiitis obliterans he has been able to find a good deal of evidence of the disease appearing in persons who consume rye bread. Moreover, in the other diseases mentioned—especially Raynaud's disease and erythromelalgia—the vaso-motor and trophic disturbances are the same as those found in ergotism. In his experimental work Kaunitz was able to produce both acute and chronic ergotism in fowls. In the acute stage the arteries near the base of the comb were found to be contracted and the media was swollen and hyaloid. The capillaries, on the other hand, were markedly dilated and contained stagnant blood which was probably the cause of the gangrene in the comb. In a more chronic case in which many of the vessels of the comb showed endarterial hyperplasia the comb was swollen to about twice its natural size, and showed vaso-motor and trophic changes. Kaunitz comes to the conclusion that owing to the known effects of toxic ergot more stringent prophylactic measures are advisable. He admits, however, that further investigations are

[1] Arch. Intern. Med., April, 1931, p. 548.

necessary and that it is not at present proved that many cases of vaso-motor or trophic disease are due to ingestion of ergot.

HOSPITAL OPHTHALMIC CLINICS.

THE scheme inaugurated by the ophthalmic hospitals of London to provide consultations and, when necessary, glasses for persons of limited means has now received the official sanction of the Ministry of Health and of King Edward's Hospital Fund, the latter body giving its consent on the understanding that the hospitals are reimbursed for any administrative charges. The scheme originated owing to the hardship involved in refusing treatment to patients coming from a distance unprovided with a certificate from their approved society for ophthalmic benefit. Under the scheme insured persons entitled to benefit and certain other groups will be admitted to a private consultation by an ophthalmic surgeon at a fee of 10*s*. 6*d*. and the provision of any necessary glasses, after which they will be referred to local doctor or out-patient clinic for further treatment. Special evening clinics for this purpose have been established at the Central London Ophthalmic, Royal Eye, Royal London Ophthalmic (Moorfields), Royal Westminster Ophthalmic, and Western Ophthalmic Hospitals, the facilities at Westminster being available only for members of approved societies entitled to ophthalmic benefit and other insured persons willing to pay a fee of 10*s*. 6*d*. At the other hospitals members of the Hospital Saving Association and non-insured persons are eligible under certain conditions. The inauguration of the scheme has enabled the hospitals to emphasise the desirability that those who require an examination of their eyes should have it done by an ophthalmic surgeon. It is hoped that the same principles will be followed by other eye hospitals and departments throughout the country.

APPARATUS FOR ARTIFICIAL RESPIRATION.

THE University College Physiological Society met on Tuesday at the London School of Hygiene to see Prof. Philip Drinker, of Harvard, demonstrate his apparatus for prolonged artificial respiration. He soon convinced his hearers that something of the kind is a necessary part of hospital equipment, and we hope his visit will serve its purpose and draw attention to favourable reports which have appeared in the United States and Canada. In brief, the patient is put to bed in an airtight iron tank from which his head projects through a close-fitting rubber collar. An electrical pump, controlled by an attendant, rhythmically produces a small negative pressure within the tank, and this expands the lungs as in normal respiration. Conscious patients can eat, drink, and sleep while in the respirator, and portholes allow the attendant to change clothing or to hand in a bedpan. Where anything more elaborate is required the negative pressures may be increased for a few minutes so as to produce hyperventilation of the lungs and consequent apnœa. Removal from the tank for a few minutes is thus made comfortable and safe. Children with intercostal paralysis following poliomyelitis have been kept in the respirator for months until their normal muscular function has been restored, and the apparatus has also saved life in cases of electrocution, severe carbon monoxide poisoning, and incomplete drowning. A smaller tank has been devised for artificial respiration in infants and has been used with fair success in 30 cases of neonatal asphyxia. If the child does not breathe within a minute it is placed in the respirator and may begin to breathe spontaneously after as long as an hour. For poisoning in adults, Mr. Drinker was careful to point out, the method is not intended to take the place of Schafer's artificial respiration; it begins where Schafer's leaves off. But as Dr. G. P. Crowden, the chairman, remarked, there is room for additional means of treatment of accidental asphyxia, which causes about 4000 deaths every year in this country. At the close of the meeting Dr. Richard Ellis was able to give independent testimony to the great relief afforded by Drinker's respirator to children struggling for breath in poliomyelitis. We hope to give further details of the apparatus in a forthcoming issue.

THE Inter-State Post-Graduate Assembly of North America meets in London next week. Arrangements for the morning lectures, to be given at the house of the Royal Society of Medicine, will be found in our Medical Diary. In the afternoons visits will be paid to hospitals and institutions.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

C. O. Gange to be Surg.-Lt.

The following appointments have been notified:—Surg. Comdrs. A. C. Paterson to *Victory*, for R.N. Hospital, Haslar, for four months' general professional course; and O. D. Brownfield to *President*, for three months' post-graduate course.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. J. B. Oldham to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. G. A. Kempthorne, having attained the age for compulsory retirement, is placed on ret. pay.

Maj. G. F. Rudkin to be temp. Lt.-Col.

Maj. (temp. Lt.-Col.) O. R. McEwen to be Lt.-Col. vice Lt.-Col. G. A. Kempthorne.

E. Hicks, to be Lt. (on prob.).

G. A. M. Knight is granted a temp. commn. in the rank of Lt.

ARMY RESERVE OF OFFICERS.

Lt.-Col. C. H. Straton having attained the age-limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Capt. R. H. Hadfield having attained the age-limit retires and retains his rank, with permission to wear the prescribed uniform.

Capt. W. A. D. Drummond, R.A.M.C., to be Divl. Adjt., 47th (2nd Lond.) Div. and Sch. of Instrn., vice Maj. D. W. M. Mackenzie.

Lt. R. McI. Gordon to be Capt.

I. G. W. Hill, (late Offr. Cadet R.S.M., Edinburgh Univ. Contgt., Sen. Div., O.T.C.) to be Lt. with seniority.

INDIAN MEDICAL SERVICE.

Lt.-Col. W. F. Brayne retires.

ROYAL AIR FORCE.

The undermentioned Flight Lieutenants are promoted to the rank of Squadron Leader: W. E. Barnes and C. A. Lindup.

SEAMEN'S HOSPITAL SOCIETY: ANNUAL REPORT.—The report for 1930 states that the expenditure was £106,241, and the receipts £99,065, and that the alterations to the Dreadnought Hospital are well under way. As a result of these works there is a heavy overdraft, and as soon as the times become more propitious the board will be compelled to make a special appeal to meet the expenditure. Extensive internal rebuilding and alterations at the Hospital for Tropical Diseases were completed during the year, and cost nearly £30,000. At the annual court of governors on May 12th, with Lord Lloyd in the chair, the Norwegian Minister thanked the society for its kindness to Norwegian seamen, and Mr. P. P. Cole, the senior surgeon, expressed the hope that they would this year be able to open wards for women and children, primarily for dependants of seamen.

SPECIAL ARTICLES

SOME SURGICAL ASPECTS OF FAULTY NUTRITION.*

BY ROBERT MCCARRISON, C.I.E., M.D., D.Sc., HON. LL.D., F.R.C.P.,

COLONEL, INDIAN MEDICAL SERVICE; HONORARY PHYSICIAN TO THE KING; DIRECTOR, NUTRITIONAL RESEARCH, INDIAN RESEARCH FUND ASSOCIATION.

Freedom of Well-fed Animals from Disease.

THE Laboratories of the Indian Research Fund Association, devoted to the study of diseases associated with faulty nutrition, are located at Coonoor in the Blue Mountains (Nilgiris) of Southern India, 6000 feet above sea-level. Their location is fortunate, for the temperature is equable, never very hot nor very cold; the mean winter temperature rarely falls below 50° F., the mean summer temperature rarely reaches 80° F. A good deal of rain falls in these hills, Coonoor coming within the range of both the south-west and the north-east monsoon; the former brings with it only occasional heavy showers, while the latter may involve us in heavy rainfall during November, December, and January. But it is rare that a day passes without sun. I have been content with corrugated-iron sheds, roofs, and floors tiled, sloped, and adequately drained. I am fortunate also in having a large staff of attendants who are highly skilled, and it is possible to ensure ideal conditions of hygiene and exposure of the animals to sunshine the whole year round.

In these conditions there live some 1000 stock albino rats. I use on the average 1100 animals a year. The pairs are kept in roomy, netted-wire, screened, and straw-filled cages, and have the peace and comfort necessary for fruitful breeding. As a rule, five or six litters are taken from each pair; and the older animals are thinned out at the age of 2 years—a life-span said to correspond approximately to the first 40 to 50 years of life in man. The average number in each litter is eight, but litters of 12 are frequent and those of 15 not uncommon. The mothers invariably rear the whole of their young.

This stock is fed on a diet similar to that eaten by certain peoples of Northern India, amongst whom some of the finest physical specimens of mankind are to be found. The diet consists of whole wheat-flour, unleavened bread (*chapattis*) lightly smeared with fresh butter, sprouted Bengal *gram* (legume), fresh raw carrots and cabbage ad libitum, unboiled whole milk, a small ration of raw meat with bones once a week, and abundance of water both for drinking and washing purposes.

During the past two and a quarter years there has been no case of illness in this community of albino rats, no deaths from natural causes in the adult stock, and, but for a few accidental deaths, no infantile mortality. During this period I have, myself, performed complete post-mortem examinations on 1189 of these rats, ranging in age from the new-born to 2 years. In none have I encountered any macroscopical evidence of disease with the exception of an occasional cyst in the liver, containing tapeworm larvæ. Both clinically and at post-mortem examination this stock has been shown to be remarkably free from disease. Disease and death have been excluded, almost completely, by minute attention to three environmental conditions: cleanliness, comfort, and food.

High Incidence of Disease in Ill-fed Animals.

I wish now to turn to my experimentation-rooms. Here are the same corrugated-iron huts, the same cages, the same scrupulous cleanliness. Here the animals are exposed in the same way to the sun's rays. But they live in separate cages—as do the controls for each experiment—isolated from their fellows; they are thus less contented than their more fortunate kith and kin in the stock animal rooms; and they are more exposed to the effects of chill, since they cannot be given straw-bedding, though each evening they are given bedding of clean cotton-waste. The main regard in which they differ from the stock animals is in their food, which is always faulty in some way or another. Further, as my business is to learn, as far as I can, how the foods eaten by the people of India are related to disease, synthetic diets are used comparatively rarely and then only for special purposes. The materials entering into the various faulty dietaries are usually those in use by the people of India; sometimes actual Indian dietaries are used.

During the last two and a quarter years I have examined 2243 of these improperly fed rats at post-mortem examination; that is to say, during the same period in which I failed to find disease in the community of stock rats. The morbid states encountered included all forms of diseases (1) of the lungs; (2) of the nose and accessory sinuses, including (3) otitis; (4) of the upper respiratory passages (adenoid growths); (5) of the eye; (6) gastro-intestinal diseases (cancer of the stomach in two cases only); (7) diseases of the urinary tract; (8) of the reproductive system (including death of the fœtus in utero and premature birth); (9) of the skin (including gangrene of the tail or feet); (10) of the blood; (11) of lymph and other glands; (12) of the endocrine system; (13) of the nervous system—nervous instability and polyneuritis; (14) of the heart; and (15) œdema. Not infrequently animals are found to be suffering from more than one of these diseases.

I say nothing of diseases of the bones and teeth, since the diets were not specially designed for their production, but mention might be made of crooked spines and distorted vertebræ and of imperfect teeth. The list includes only those morbid states which I have myself seen; it has been prepared from the post-mortem records of the 2243 imperfectly fed animals. It is an experiment on a large scale extending over two and a quarter years. As controls there is a community of hygienically housed rats, fed on a well-balanced diet composed of natural foodstuffs, as described, so combined as to provide in proper amount and proportion all elements and complexes necessary for normal nutrition. On the other side, there is a community of rats, also hygienically housed but fed on ill-balanced diets composed mainly of cereal grains or cereal products and vegetable fats with little or no milk, butter, and fresh vegetables. I claim for this experiment that it proves conclusively that one-sided diets which are disproportionately rich in cereals and poor in animal fats, milk, and *fresh* vegetables are capable of inducing in albino rats a large proportion of the diseases included in our calendar of human ailments; I may add that of all

* Being an abstract of the first of two lectures delivered at the Royal College of Surgeons of England, May 18th and 20th, 1931.

the faulty diets I have used, that composed of white bread, margarine, tea, sugar, jam, preserved meat, and scanty overcooked vegetables—a diet in common use by many people in this country—proved to be one of the worst and most likely to be associated in rats with many of the morbid states I have mentioned, especially diseases of the respiratory and gastro-intestinal tracts.

Rats are not the only animals I use: guinea-pigs, rabbits, pigeons, and monkeys are also used. In them I have found many of the above-mentioned diseases and some others besides. Of the latter I may mention the following: prescorbutic states, scurvy, and duodenal ulcer in guinea-pigs; hyperplastic goitre in rabbits; epithelioma contagiosum, polyneuritis, and true beri-beri in pigeons; and ulcerative colitis in monkeys. Two conditions I have not, so far, encountered: gall-stones, observed by Fugimaki (1926), de Langen (1929), and others; and cataract, observed by Eckstein and Szily (1924).

In every species—pigeons, rats, guinea-pigs, rabbits, and monkeys—I have found the same thing: properly fed animals remain remarkably free from disease, improperly fed animals are remarkably subject to it. It is reasonable, therefore, to assume that the human species is no exception to this rule and that many of the ailments, to which man is erroneously supposed to be heir, are the outcome of his improper feeding, a general conclusion which I have been emphasising during the past 12 years. Some may hold that it is not possible directly to translate to human experience the results of an experiment such as that just described. This may be true if we seek to do so too rigidly and fail to take sufficient count of other environmental factors to which human beings may be exposed. But in general the results of an experiment of this kind do, in my opinion, apply to man, and point the way to a solution of many ætiological problems connected with his physical infirmities.

Vitamin A Deficiency.

In the above list of diseases there are many of interest to the surgeon. Sinusitis, adenoid growths, otitis media, gastro-duodenal ulcer, gynæcological ailments, certain types of goitre, and urinary calculus are some of them. At first sight it would appear that morbid states so dissimilar as adenoids and stone in the bladder had nothing in common; yet ætiologically they are not so far apart. All these surgical conditions were found to have this in common; they occurred in animals whose ill-balanced diets contained little or no vitamin A bearing food materials, such as raw milk, butter, cod-liver oil, carrots, and fresh green vegetables. In my hands these food materials, when suitably combined, have protected my animals from these diseases, and I do not doubt that in the hands of the surgeon they will go far to protect his human patients from them and facilitate their cure and non-recurrences after operation.

[The lecturer here pointed out that he laid stress on the food materials themselves rather than on any particular ingredient, believing that the elements and complexes of normal nutrition combined in Nature's laboratory in a way that cannot be satisfactorily imitated. In the materials on which his stock rats were fed, and on which, he said, some of the finest physical specimens of mankind were reared, he found that an insufficiency of vitamin A might occur and be responsible for the occurrence of surgical diseases. He showed a number of slides illustrating characteristic changes, and said that the sites in which these changes had been observed in experimental animals were the nares, larynx, trachea, bronchi, submaxillary glands, parotid gland, and the accessory salivary glands of the tongue and pharynx; the pancreatic duct, bladder, ureter, and pelvis of the kidney; the uterus and oviduct; the epididymis, prostate, and seminal vesicles; the conjunctiva, Meibomian gland ducts, cornea, lacrymal gland, Harderian gland, and the extra-orbital (lacrymal) gland; the thymus (Wolbeck and Howe, 1925); and the thyroid gland. He found the changes, he said, to occur more readily in growing animals and, though focal in distribution, to have no definite confines or localities. He observed that, since man's food is rarely or never wholly lacking in the factor, it is important to realise that the conditions could occur in animals fed on human dietaries containing insufficiency of vitamin A. The changes would be helped in their occurrence not only by all food faults, but by unfavourable environment, the interplay between nutritional and climatic or bacterial conditions being thus illustrated. He continued:—]

The varying occurrence and location of the changes due to vitamin A deficiency are among the most interesting things about them. Thus, in monkeys fed on a diet said to be complete in other regards, but lacking a sufficiency of vitamin A, eye changes, sinusitis, and mastoiditis, so common in rats, are, as E. B. Tilden and E. G. Miller (1930) have shown, conspicuous by their rarity. Twelve years ago (1919) I demonstrated that the colon was of all organs in monkeys the most sensitive to faulty nutrition; and the recent work of Tilden and Miller, while confirming this observation, re-emphasises the importance of vitamin A deficiency in causing the ulcerative colitis which is so conspicuous a feature in these animals. The monkey's colon is also very sensitive to deficiency of other vitamins (McCarrison, 1919); particularly of vitamin C "which causes a condition varying from local congestion and thickening of the mucous membrane to one indistinguishable from ulcerating sloughing dysentery" (F. P. Mackie and G. D. Chitre, 1928). In some of these respects man resembles the rat more than the monkey. Thus, he is very susceptible to the eye changes resulting from insufficiency of vitamin A bearing foodstuffs in his diet, if one may judge by the prevalence of keratomalacia in the Madras Presidency, and by its amenability to treatment by cod-liver oil (Wright). But I suspect that he resembles the monkey in the sensitiveness of his colon to food deficiency; the number of cases of ulcerative colitis of "unknown" cause (T. B. Menon, 1930) occurring in India is sufficient to justify this suspicion. But however the changes vary, either as to extent or location, they are always to be found in mammals of all species so far examined—rats, guinea-pigs, rabbits, and monkeys—and in man himself.

These changes are independent of infection, though infection is frequently superimposed upon them. Indeed, it is because of them that infection becomes possible, since they occur for the most part in "outside" coverings of the body: the respiratory passages, the urinary tract, the reproductive tract, the conjunctiva, the nasal passages, the ear, and the ducts of organs. They are breaches in the walls of the body's defences, through which the invading microbe may enter. In this sense vitamin A is "anti-infective"; but the "anti-infective" quality is shared with other vitamins—C, B, and D—though exhibited by them in other ways.

Two points of interest to the surgeon remain to be mentioned: (1) if rats, fed on a diet deficient in vitamin A, be artificially infected with a bacterium,

such as the Breslau bacillus (paratyphoid), they usually die from the resultant infection. But some may live, and in them the infection persists in the lymph glands "for a very long time after the general infection has been overcome" (H. C. A. Lassen, 1930). It seems to me probable that chronic enlargement of lymph glands in childhood, due usually to infection of one kind or another, may often be due to such persistence of infection as a result of a vitamin A deficient diet. Further, it seems probable that the focal breakdown of the tissue defences induced by this deficiency may be concerned in the causation of those "septic foci" about which so much is heard of nowadays. (2) I have spoken above of breaches in the walls of defence against bacterial invasion consequent on the use of vitamin A deficient diets, and I have mentioned that other vitamins may also exercise an anti-infective action though exhibiting it in a different way. This way may not need the breaching of the walls but their scaling. I take the following from an unpublished manuscript which Dr. Lloyd Arnold, of the Department of Pathology and Bacteriology, Chicago, has recently sent me: "McCarrison has repeatedly called attention to the early appearance of digestive disturbances in vitamin deficiency studies. The pathological examination of the dead animals following avitaminosis experiments shows evidence of tissue changes due to infections of various kinds. We have found that one of the first demonstrable changes in avitaminosis is an alteration in the distribution of the bacterial life within the lumen of the intestinal tract. The bacteria ingested by the mouth are not destroyed in the usual manner, but remain viable for many hours within the contents of the whole length of the small intestine. The mixed bacterial flora of the large intestine ascend into the upper levels of the small intestine. There is a gradual and progressive loss of the power of the body-surface to control the microbic life existing in contact with it. These findings have been constant and hold for vitamin A, B, and D deficiencies. By the time the adult animals show a loss in body-weight or the young animals show a stationary weight curve, there is evidence of bacterial invasion of the mucosa of certain surfaces. These latter observations have been made by numerous investigators. We attribute the early inflammatory changes in the lining membranes of the eye, mouth, throat, alimentary tract, &c., to the loss of power of these body-surface coverings to regulate the bacterial flora in contact with their cells. This precedes evidence of invasion of the membrane by bacteria."

This statement, so amply demonstrated by Dr. Lloyd Arnold's investigations, calls to mind the contentions of Sir Arbuthnot Lane and Dr. Nathan Mutch in regard to infection of the upper reaches of the intestine consequent on chronic gastro-intestinal stasis, a condition which, as my own researches (1921) have shown, may be due to the consumption of faulty food from the "first bottle" onwards through life.

The function of vitamin A, so far as it is known at present, is thus to maintain the functional integrity of the cells covering body-surfaces, thereby preventing invasion of the organism by microbic agents. Here, however, I must re-emphasise the position which I reached more than ten years ago, and which all my subsequent work has but strengthened—that whatever the specific function of any vitamin may be, vitamins are but links in the chain of essential substances requisite for the maintenance and harmonious regulation of the chemical processes in the tissues, and their action must be considered in connexion with metabolism as a whole—i.e., in relation to balance of food ingredients in general, to organs of digestion, and assimilation and to endocrine regulation of metabolism. Their deficiency, like that of the other elements and complexes necessary for normal nutrition, leads to depreciation of cellular function: depreciation of cellular function is the foundation upon which disease is built (McCarrison, 1921).

Surgical Diseases and Faulty Nutrition.

[The lecturer said he would briefly mention some examples in surgical diseases associated with faulty nutrition.

Adenoids and Otitis Media.—Referring to slide demonstrations already made of adenoids in the trachea, he said that rats developed adenoid-like growths in the neighbourhood of the nasopharynx from faulty nutrition and asked if there was not here an analogy with growths in the nasopharynx of children. Of otitis media, he said that as a result of faulty food, deficient in vitamin A, pus might be found in the middle ear of 60 or even 70 per cent. of rats, and the frequency of the condition in rats when on faulty diet must recall the frequency of the condition among school-children in England and Wales, improperly fed.]

Otitis Media.—The probable nutritional factor in the causation of otitis media does not appear to me to have received the consideration it deserves. According to S. Hastings (1925) a high proportion of all cases occur before the fifth year and many before the first birthday. In 1923 no less than 46,000 children had ear trouble; while 90 per cent. of deafness in adults is due to preventable causes in childhood. Ponfick reported that of 100 autopsies in children under 4, who died from various diseases, 91 had evidence of middle-ear disease, and in only 10 of these was the trouble recognised during life. The causes giving rise to middle-ear disease interact with one another; they are squalid poverty—with its accompaniment of malnutrition—neglected catarrh, tonsils and adenoids, mouth-breathing and the after-effects of measles, scarlet fever, and diphtheria. My rats do not suffer from the three last; but my experience in these animals leads me to believe that the insufficient supply of vitamin A bearing foods may be responsible for middle-ear disease in children to an extent much greater than is generally believed.

Gastro-duodenal Ulcer.—Twelve years ago (1919) I recorded the occurrence of this condition in guinea-pigs fed on a scorbutic diet of crushed oats and autoclaved milk. Recently I have repeated this experiment with the same result; and in this later experience I have found duodenal ulceration at all stages of the process up to perforation (in one case), the resulting abscess being localised. Magee, Anderson, and M'Callum (1929) have observed similar conditions in calves fed on food deficient in certain essentials. Gastric and duodenal ulcer are extremely common in Southern India. An experiment was accordingly undertaken to test the influence of diet in the localities. Albino rats were used; and the experiment was continued for 675 days. Two diets were employed: one, resembling that eaten by the poorer class Madrassi and containing rice, red pepper (chillies), tamarind, a little fish, and *conjee* (rice water); the other, resembling that of the poorer class Travancorian and consisting largely of tapioca root, with rice, a little fish, red pepper, and rice water. Both these diets were very deficient not only in vitamins of the A, B, and C classes, but in other regards also. The diets were prepared and cooked as used. About this time I had occasion to examine at post mortem

some hundreds of well-fed stock rats who had lived through the same period of 675 days. In none of these was gastric or duodenal ulcer found. Amongst the rats fed on the Madrassi diet the incidence of gastric ulcer was 11·1 per cent., while the duodenum showed no signs of ulceration; amongst those fed on the Travancore diet 27·7 per cent. had gastric ulcer. No duodenal ulceration was found in animals fed on either diet, although in 11·1 per cent. of those fed on the Travancore diet a marked duodenitis was present. The limitation of the ulceration to the stomach in rats was the more remarkable because the Travancorian diet is especially associated in man with duodenal ulcer. Here, then, is unequivocal proof that two diets in use by certain people in India are capable of causing peptic ulcer in albino rats.

The excellent results reported by S. Harris (1928) in the treatment of gastric and duodenal ulcer by vitamin rich food are in conformity with the findings in this experiment.

Gynæcological Ailments.—The health of the womb and its appendages, the ovary, and the oviducts may be affected by the quality of the food, while changes brought about in the bony framework of the pelvis may, as is well known (Stone, 1930), be a fruitful cause of stillbirth and maternal mortality in childbirth. Fertility, the course of pregnancy, labour, resistance to infection following labour, and lactation may all be affected adversely by defects in quality of the food. "Nothing so predisposes to maternal death at confinement as an unhealthy womb" (Pearse and Williamson, 1931), and faulty nutrition may also be concerned. Often I have seen deficiency-fed rats die in pregnancy or at term from causes dependent on their faulty nutrition, and often also rats that came to term only to die with five or six fœtuses in their wombs. Some of the anæmias of pregnancy so common in India are dietetic in origin—as the recent work of Dr. Lucy Wills has so conclusively shown. Faulty nutrition is not invariably a factor in the production of the tragedy of maternal mortality in human childbirth, but as in other departments of medicine experience in rats has pointed surely to means for the relief of suffering in mankind; we might well accept this guidance more readily in regard to our women, and urge insistently that the mothers of our race be fed with knowledge and understanding.

Lymph-adenoid Goitre and Graves's Disease.—Lymph-adenoid goitre, originally described in man by Dr. G. S. Williamson and Dr. I. H. Pearse (1925), is "the hypertrophic reaction of a physiologically inefficient organ with which there occurs a preponderance of lymphocytic aggregates, fibrosis, and a peculiar atrophy of the parenchyma." I have produced it under experimental conditions in rats (McCarrison, 1927). In these animals the physiological inefficiency of the gland can be induced by faulty nutrition, but the exciting cause of the goitre is some positive factor which has so far escaped me. One cannot be certain when this type of goitre is going to occur; all that one can be certain of is that it surely will occur, in its own good time, provided the food is of a certain character. It is unrelated in its origin to iodine deficiency. I understand that it is now possible to diagnose this condition clinically in the human subject, and that thyroidectomy has been performed for its relief in not a few cases within recent years in London. Mention of its association with the use of foods deficient in vitamin A recalls the observation of Robinowitch (1929) that a combination of relatively minute quantities of organic iodine with a concentrated preparation of fat-soluble vitamins causes as marked a lowering of the metabolic rate in Graves's disease as larger doses of iodine when not combined with these vitamins. Fraser and Cameron (1929) have made a similar observation, using small amounts of sodium iodide instead of organic iodine, and Abelin's demonstration (1930) of the great value of vitamin treatment in Graves's disease is relevant.

Again, it has lately been shown, in my own laboratory, how important is the balance between fat-soluble vitamins and iodine in the diet; the administration of iodine to rats fed on diets deficient in these vitamins may actually cause goitre (McCarrison, 1930). We have found also that the maintenance of an adequate iodine content in the thyroid gland is largely influenced by the content of vitamin C in the food (Sankaran, 1931). Few organs of the body, indeed none with the exception of the suprarenals and thymus, are more profoundly affected by faulty nutrition than the thyroid gland, and few are more sensitive to this influence.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

TUBERCULOSIS IN CO. KILKENNY.

Dr. P. Heffernan, tuberculosis officer of County Kilkenny, has drawn attention to the altering incidence of tuberculosis in his county. He states that pulmonary tuberculosis is fast disappearing, whereas the bovine type of disease appears to be on the increase. The incidence of this disease was general in the county, but most marked in the city of Kilkenny. In many cases in which he attempted to trace the source of the disease he obtained the history that the patient partook of milk from a cow "with something wrong with the udder." He has difficulty in dealing with the problem. If attempts are made in a poor man's home to carry out pasteurisation, the milk is usually boiled, and the child or children may get rickets. He draws attention to the eradication of bovine tuberculosis in Toronto since pasteurisation was introduced there in 1915.

SCHOOL-CHILDREN IN WEXFORD.

One of the most hopeful factors in regard to the system of school medical inspection recently established in Ireland is the wholehearted way in which the teachers are coöperating. Evidence of this was given last week in County Wexford, when the primary school teachers of the county met Dr. Bastible, medical officer of health for the county, in conference. Dr. Bastible outlined the methods of inspection he intended to adopt, and the treatment that would follow his advice. He wanted the help of parents and school managers, as well as of teachers. He asked the teachers to guide him as to the children for whom free treatment should be provided. He drew attention to the lack of proper sanitary equipment in many of the schools, and said that the schools should act as models of good sanitary arrangements and not as examples of backward methods. The teachers were much interested in Dr. Bastible's plans, and unanimously assured him of their coöperation.

HEALTH AND THE IRISH LANGUAGE.

There is a real danger that some of the methods adopted in the movement for the revival of the Gaelic tongue in Ireland may inflict an injury on the health of the people. It is natural and proper

that in those districts where Gaelic is the common spoken language medical officers and other public officials should be able to speak to the people in the vernacular. Without such ability their efficiency would be lessened. There is no such justification, however, for placing medical men who have a knowledge of Gaelic in a privileged position in seeking appointments in districts where Gaelic is not spoken. An advertisement appeared in the daily press last week inviting ophthalmic surgeons to apply for an appointment as visiting ophthalmologist to the school-children in a certain eastern county, in which county there is no Irish-speaking district, and there are probably hardly any native speakers of Irish even among the adults. It was added that "a substantial preference" would be given to candidates who had a knowledge of Irish. This can only mean that it is intended to subordinate a substantial amount of professional knowledge and skill to a knowledge which has no bearing on the duties to be performed. The interests of the children in a matter of health are to be sacrificed to the carrying into effect of a doctrinaire policy in all its details. It cannot even be urged in defence of this condition of candidature that the knowledge of Gaelic on the part of the ophthalmologist will hasten by a moment the revival of the Gaelic tongue in this particular county.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

SOOT AND SMOKE.

AT the Dundee meeting of the Scottish branch of the National Smoke Abatement Society some strong statements were made on the relation of soot to cancer. The fact of the association of cancer with soot and tarry products has long been known, but it is easy to exaggerate the importance of soot from diffused smoke as a cause. The net result, however, of the work of the Smoke Abatement Society is considerable. There was strong support for proposals regarding smokeless fuel. Mr. Ashford, senior smoke inspector, Glasgow, gave as his view that the solution lies in the extended use of electricity for power purposes, the extended use of mechanical stokers in steam boilers of larger plants, the substitution of smokeless fuel in furnaces where mechanical stoking was not suitable, including gas firing for metallurgical furnaces, and the substitution of smokeless solid fuel for new coal in sectional water heaters and also in steam wagon boilers. But to obtain results, metallurgical furnaces, as well as domestic sources of pollution, must come within the influence of a Smoke Abatement (Scotland) Act, yet to be obtained. Recent legislation has been somewhat helpless in the effort to control smelting in the iron districts of Scotland. It has been frequently pointed out that the methods followed make profuse smoke and that without a vast displacement of old plant nothing much could be done. In fact, we may say that, for the industrial areas, the smoke problem is little further advanced than it was over 30 years ago.

FOOD AND NUTRITION.

Major Walter Elliot, M.P., gave one of the Scottish series of medical talks arranged with the British Broadcasting Corporation. He spoke on Scottish Investigations on Food and Nutrition, and is certainly an authority on this subject, because as chairman of the research committee of the Empire Marketing Board he was successful in obtaining money for the first Scottish experiments on milk. Undoubtedly, Scotland may take credit for leading the way in the investigation of milk in its relation to human growth. Major Elliot handsomely recognised the special work of Prof. E. P. Cathcart and Dr. John Orr in connexion with nutrition during the war. Of milk, he said, "In nutrition it is no exaggeration to say that the present Scottish work has been right in the very forefront of all such work in the whole world." Only last month the Secretary for Scotland opened the Hannah Research Institution, with a view to studying the whole set of problems, animal and human, summarised in the one word—milk. These Scottish B.B.C. talks are not fully reported, and steps should be taken to see that they are printed somewhere, and circulated complete.

RELIEF OF INCURABLES.

Apart from the Longmore and Liberton Hospitals for Incurables, there is an old Edinburgh Society called the Royal Society for Home Relief of Incurables. The Society goes back 120 years. It grants allowances to sufferers from all parts of Scotland who, on account of incurable diseases, are no longer able to earn their own living. Last year the number of applications was the highest recorded. The allowance granted to the accepted cases was £10 a year and that allowance, though small, was a very great assistance to the annuitants, helping them to procure medical appliances that would otherwise be beyond their reach. During the year the Society distributed £4837 to 445 beneficiaries. The income for the year was, apart from the Dunlop cancer fund, £7563. From the Dunlop cancer fund itself £2076 was distributed last year, and it was found possible to increase the usual annuity by £2 to £16.

EDINBURGH HOSPITAL SCHEMES.

As part of the municipal hospital scheme, Seafield poorhouse at Seafield-road, Leith, is to be converted into a general hospital for the sick and will have accommodation for 376 patients with the necessary quarters for nurses and maids. The estimated cost of the change is £21,000. The work of reconstruction will be begun shortly and will take 18 months to complete. Meanwhile, the inmates of the poorhouse will be transferred to Craiglockhart. Seafield poorhouse was used as a hospital by the American Admiralty during the war. The Americans spent many thousands in developing the hospital and, among the hospitals of the period, Seafield is one of the best. It is situated on the sea border and lies well. The arrangements for medical staffing still seem to be under discussion by the medical school and the university.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

MEDICO-LEGAL MATTERS.

THE sixteenth French Medico-Legal Congress, which opened on May 4th, in the Medico-Legal Institute, has dealt with a number of burning questions. Perhaps the most burning was the responsibility of the surgeon towards the patient on whom he operates, as illustrated by the unhappy fate of the surgeon, Dujarier, who did an æsthetic operation on a woman's leg which was followed by

gangrene.[1] The discussion gave occasion for protests against such legal judgments as those to which Dujarier fell a victim, but it must be confessed that the attitude of medicine towards the law was reminiscent of that of the mice who, in solemn conclave, recommended belling the cat. Another subject to be discussed was that of motor-car accidents, and the numerous cases of abortion alleged to be due to such accidents. It was suggested that, in fatal road accidents, a post-mortem examination should in the future be just as obligatory as it is already in fatal criminal cases. Traumatic appendicitis also came in for discussion, as well as traumatic sarcoma and sudden death from inhibition coinciding with attempts at abortion. In connexion with the criticism of "death by inhibition" as being in such cases a nebulous and negative conception, Dr. Paul described a case of prolonged and profound syncope provoked solely by a simple hygienic vaginal douche in the absence of pregnancy.

RAINFALL AND INFECTIOUS DISEASE.

In a communication to the Académie de Médecine on April 21st, Dr. Paquet developed his thesis that the rainfall influences the evolution of certain infectious diseases, such as typhoid fever, scarlatina, measles, diphtheria, and tuberculosis. His studies referred to the department of the Oise in the 20-year period 1911–1930. The notifications of typhoid and paratyphoid fever showed marked differences from year to year, and when a graph showing the notifications month by month, was compared with a graph showing the rainfalls in the same periods during the 20 years under review, it became evident that the driest years were the worst typhoid years, and that the notifications tended to be most numerous a month or two after heavy rainfalls following a more or less prolonged drought. A rainy spring would be followed by much fewer notifications. The outbreaks of typhoid following heavy rainfalls after a drought were traced to pollution of wells due to a too sudden surface flushing with rain water. With regard to scarlatina, the annual notification again showed wide oscillations—from 556 in 1914, to 70 in 1918. A blunt peak lasting two or three years would be followed by a sudden fall which would either be continued in the following period, or would remain flattened out for some years. On certain occasions, sudden rises of the monthly notifications of scarlatina coincided with a period of exceptionally heavy rainfall. The annual variations in the notifications of measles showed even wider oscillations, with a maximum of 1500 in 1912, and a minimum of 95 in 1922. The tendency of measles to flare up every second or third year could be correlated with years with a heavy rainfall. Dr. Paquet also associated a high incidence of diphtheria in the autumn and winter months with heavy rainfall. Even in the case of such a chronic disease as tuberculosis, he has been able to establish a certain correlation between rainfall and mortality.

TINNED FOOD.

It is commonly believed that if tinned foods are adequately supplemented by vitamin-containing substances, all is well. This teaching was vigorously attacked by the explorer, Dr. J. B. Charcot in a communication to the Académie de Médecine on May 5th. He described a condition which begins among explorers with a slight œdema over the front of the tibia, whence it spreads to the rest of the limb, and later to the scrotum and abdomen. At the same time small red spots, like flea-bites, appear on different parts of the body. Large ecchymoses sometimes appear, notably over the large joints, and ulcers over the joints of the fingers, but ulceration of the gums is rare (Charcot has never seen such a case) and the patient's most pronounced symptom is extreme lassitude, which ends in five to seven months in fatal cachexia. When, in such cases, the patient continues to eat preserved foods, even in small quantities, the administration of any number of vitamin-containing foods will not prevent the disease from pursuing its course inexorably. On the other hand, if the patient cuts preserved foods completely out of his menu, his symptoms will, even if severe, disappear in a few days, and he will be completely restored. Charcot related how during his second expedition in 1908–1910 he diagnosed scurvy in himself and a companion, and how they dosed themselves with lemon juice and ate fresh meat and adopted a general antiscorbutic régime without, however, dispensing altogether with preserved foods. Their symptoms became worse, and it was only when he was in dire straits, hardly able to walk, that Charcot reduced his dietary exclusively to fresh meat (seal). After what he described as a "débâcle urinaire formidable," his symptoms disappeared completely in four days, and he felt perfectly fit. His companion, who was put on the same régime, was cured in five days, the ulcers from which he was suffering disappearing without leaving the slightest scarring. Dr. Charcot is inclined to incriminate preserved fish as well as preserved meat in this disease which he describes as "la maladie des conserves."

[1] See THE LANCET, April 4th, p. 774.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

AUTOMOBILE AND AEROPLANE ACCIDENTS.

SINCE it is impossible to determine the population exposed to risk in the automobile, we cannot say whether the air is yet safer than the roads. But it is evident that the trend is in that direction. During the 18 months ended Dec. 31st, 1930, there were more deaths from automobile accidents than were suffered by American forces during 18 months of the world war (50,900 to 50,510 respectively). The first quarter of 1931 has seen 6230 automobile deaths, according to records of the National Safety Council. Three specific violations of traffic regulations account for 68 per cent. of the 1930 accidents. They are: exceeding the speed limit, driving on the wrong side of the road, and failing to give right of way. About 90 per cent. of the killed and injured were victims of cars in good mechanical condition. Half of the fatalities occurred in collision with pedestrians. During the same year (1930) 400,000 passengers were carried in the air and 24 were killed. In the last four years the number of air passengers has increased 31 times, while the fatal air accidents have increased only four times.

BIRTH CONTROL.

The Public Health Relations Committee of the New York Academy of Medicine have been considering birth control in its relation to the medical profession. They find that the conservatism of the medical profession with reference to contraception has been justifiable, but that recent research in this field demands recognition. "The guidance of the public

in sexual matters should be assumed by the medical profession wherever it naturally comes within the scope of their work." They regard the present importance of the work of the Birth Control Clinical Research Bureau as temporary. This bureau maintains a contraceptive clinic at which the attendance far outnumbers the total of patients attending the nine contraceptive clinics attached to hospitals in New York city. But the modern tendency is away from detached dispensaries. And in this case the association with a general hospital is all the more desirable since "lacerations, erosions, and displacements, calling for treatment or operation, are many and are frequently overlooked." A birth control clinic also offers opportunities for the detection of early cancer or communicable disease.

The Public Health Relations Committee recommends: (1) that the Academy concern itself solely with the medical and public health aspects of birth control and not with its economic aspects; (2) that present contraceptive clinics associated with hospitals be continued and others established as the need appears; (3) that where an extramural clinic exists to meet a temporary need it should be staffed with men who have an adequate knowledge of gynæcology and with consultants available; and (4) that instruction in modern contraceptive measures and in the indications therefor should be introduced into the curriculum of medical schools and that post-graduate instruction should become available to practising physicians.

THE PRACTICE OF MEDICINE IN MEXICO.

The department of public health of the United States of Mexico finds that many of the foreign "physicians" who enter Mexico to practise medicine have obtained their licences either from a "diploma mill" or by some other irregular means. On the advice of the public health department the Secretary of the Interior has issued instructions to the immigration authorities to the effect that foreign physicians will not be permitted to enter Mexico to practise medicine unless they have been previously authorised to do so by the Department of the Interior. It is said that the difficulty which Mexican physicians are experiencing in making a living adds to the demand to exclude foreign competitors.

MEDICAL MEN AS ARTISTS.

More than 250 examples of painting, drawing, photography, statuary, woodcarving, and metal work by medical men were on exhibition this spring at the New York Academy of Medicine. This was the fifth exhibition of the New York Physicians' Art Club which invites all members of the medical profession who wish to do so to exhibit their work in the plastic or graphic arts. "With a few exceptions," writes Stephen Bourgeois in the catalogue, "most of the doctor-artists are in fact more interested in technic, in skill, in methods of composition, or colour arrangement than in actual expression, although they probably believe the contrary." The artist-critic is strangely surprised to find that the doctors are "inveterate optimists."

NEW YORK STATE HEALTH COMMISSION REPORTS.

The distinguished commission appointed last May by Governor Roosevelt has presented its preliminary report. If no recommendations are made for change in the essential structure or policies of the State department, it is not because Dr. Farrand and his fellow commissioners have overlooked any detail of administration. They make comprehensive recommendations for improving the efficiency of local health administration, stressing especially the wastefulness of the present abundance of local boards of health of which there are no less than 1036 in the State. This system of many small health units, designed by law to meet the conditions of 1850, in the opinion of the Commission fails utterly to meet the needs of 1931. The units are too small to provide the services which modern public health demands. Advances which have resulted from research in the prevention of disease necessitate the employment of trained personnel who will devote their entire time to protecting community health. Moreover, better methods of communication by reason of the telephone, improved highways, and the automobile, make it easier to serve the larger territory of a county than it was to serve a single town a half century ago. Throughout the country the county with full-time personnel is recognised as the best possible unit for satisfactory local health administration. In 35 States there are more than 500 county health departments, some of which have been in successful operation nearly 20 years. The Commission feels that this is the most vital matter it has had to consider, and urges that legislation be enacted substituting the county as the unit of local health administration in place of the town and village. Other recommendations include the provision of more space for sanatorium care of the tuberculous, and provision for treatment by the county health departments of venereal disease, whether the patient be indigent or self-supporting, infectious or not.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.

THE annual general meeting of this society was held on May 13th, with Mr. V. Warren Low, the President, in the chair. It was reported that the total membership of the society at the end of the year was 285, made up of 160 life members, 124 ordinary members, and one honorary member. During the year six members died and seven new members were elected. On Dec. 31st, 51 widows and 12 orphans were in receipt of grants. One widow died during the year; since 1917, when she came on the fund, she had received £925 in grants, her husband having paid £31 10s. in subscriptions. The annual grant during 1930 was £75 to widows over 65 years of age, and £60 to those under 65. Each orphan under 16 years of age received £50. In addition a Christmas present of £10 was made to each widow and orphan. This present being dependent on the money available for distribution, was smaller than in recent years. A sum of £241 5s. was also paid to six orphans who had reached the age of 16, to enable them to continue their education at school or start on some professional or business career. The invested funds of the society now amount to £140,700, and the cost of administration was just under 6 per cent. of the total income.

The society is described as a "mutual provident benevolent association of medical men who at the time of their admission were resident within a radius of 20 miles from Charing Cross." Admitted under 40 years of age a member pays an annual subscription of two guineas. When three annual subscriptions have been paid his dependants become eligible for benefits. If under 30 years he may become a life member for a single payment of 20 guineas with immediate eligibility of his dependants for benefits. For his subscription of two guineas a newly married man obtains a guarantee that his wife and young children will, in the event of his early death, not be left unprovided for. Such an insurance on a commercial basis would, it is pointed out, involve very large premiums. Until success in practice enables a member to make provision for his dependants his subscriptions are of a potentially provident nature. When success in practice renders them ineligible for benefits his subscription becomes of a benevolent nature, safeguarding the fund for those less fortunate.

Further particulars and application forms for membership may be had from the Secretary of the Society, at 11 Chandos-street, Cavendish-square, W. 1.

PUBLIC HEALTH SERVICES

MENTAL HOSPITAL REPORTS.

THERE were 675 patients in the CITY OF LONDON MENTAL HOSPITAL at Stone, Dartford, on the last day of last year; 80 of these were on a voluntary basis. The hospital has been slightly overcrowded and the applications for private patients have exceeded the accommodation available. The recovery-rate for the year was 38 per cent. for certified patients and 54 per cent. for voluntary patients. The death-rate for certified patients was 5·6 per cent., and four voluntary patients also died. The general health was good throughout the year. All the modern forms of treatment, including ultra-violet light and induced malaria, are applied in this institution. A great deal of work was done to improve the buildings; the visiting commissioner especially mentions the proposal to place a loud-speaker in every ward and headphones in the hospital wards. A large measure of parole was granted. Five nurses received their R.M.P.A. certificate during the year.

The MANCHESTER MENTAL HOSPITAL published its report together with that of the Manchester Royal Infirmary. There were 253 patients on the books on Dec. 31st, 1930, and 112 voluntary patients were admitted during the year. The recovery-rate was 34·9 per cent. and the general health throughout the year was good. To obtain more accommodation for women patients part of St. Ann's Hospital has been re-opened and fitted up for 20 ladies. Five cases of general paralysis were inoculated with malaria; two of them were able to resume their ordinary occupations, while a third is to go home on leave shortly. Four nurses obtained their R.M.P.A. certificate during the year, bringing the total to 20.

HOSPITAL FOR PRIVATE PATIENTS.

The annual report for 1930 of the CASSEL HOSPITAL (Swaylands, Penshurst, Kent) for functional nervous disorders, deals, as usual, only with patients who have been discharged for at least one year. Its details of individual cases will be valuable to every psychiatrist; the care for the individual that is the keynote of the treatment at Swaylands is manifested in an annual report that consists almost entirely of case records and hardly at all of the statistics prominent in most documents of the kind. Of 90 psycho-neurotic patients under review, 66 are now well or much improved, and 17 have not benefited; of the remainder no data are available. Swaylands has often remarked on the difficulty of successfully treating the "obsessive-compulsive" patient, and deserves credit for having so much improved three patients out of seven in this class that they may be called well. Two others had improved considerably by the time of their discharge but have not been heard of; the remaining two, who did not improve, were both middle-aged. The successful three were all young and had intensive treatment, including analysis. Readers of our report of a recent discussion on anorexia nervosa [1] will be interested in a case which presented what Dr. T. A. Ross calls an unprecedented difficulty, that she adhered to a law in open opposition to the staff. He says that these patients will cheat if they get a chance but that, if they do not, they are most docile. This experience differs from that of those authorities who spoke at the meeting of a "relentless campaign" and of the obstinacy and implacability of some patients. The patient under report laid down and adhered to the law that she would take no milk nor carbohydrate, and became so ill that the medical authorities tried the desperate expedient of saying to the nurse that she was not likely to live through the night. This step, although she appeared unconscious, was followed by a slow, difficult improvement; in 11 months she had increased her weight from 5 st. 1 lb. to 6 st. 9 lb. only, but as her hostility had disappeared she was discharged, and is now well. At Swaylands no attempt was made to feed her; she was merely told what would happen if she starved, and only when she realised how desperate her condition was did she give in. Dr. Ross promises a long and retrospective report next year, which will without doubt throw clearer light upon the working of this valuable institution.

[1] THE LANCET, April 18th, p. 165.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 9TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 186; scarlet fever, 1587; diphtheria, 946; enteric fever, 45; pneumonia, 959; puerperal fever, 50; puerperal pyrexia, 119; cerebro-spinal fever, 63; acute poliomyelitis, 2; acute polio-encephalitis, 2; encephalitis lethargica, 10; dysentery, 16; ophthalmia neonatorum, 128. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 12th–13th was as follows: Small-pox, 232 under treatment, 4 under observation (last week 257 and 7 respectively); scarlet fever, 1216; diphtheria, 1534; enteric fever, 13; measles, 179; whooping-cough, 434; puerperal fever, 32 (plus 17 babies); encephalitis lethargica, 185; "other diseases," 185. At St. Margaret's Hospital there were 20 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 36 (3) from measles, 9 (0) from scarlet fever, 25 (6) from whooping-cough, 21 (6) from diphtheria, 42 (10) from diarrhœa and enteritis under two years, and 40 (5) from influenza. The figures in parentheses are those for London itself.

Chesterfield reported the only death from enteric fever. Only 3 deaths from meningococcal meningitis occurred in London, 1 in the age-group 25–35. Seven deaths from measles were reported from Birmingham, 6 each from Liverpool and Sunderland. Four of the 9 deaths from scarlet fever occurred at Portsmouth. Liverpool reported 3 deaths from whooping-cough. Diphtheria claimed 4 victims at Leeds and 3 at Liverpool. Diarrhœa was credited with 5 deaths at Manchester. The 35 fatal cases of influenza outside London are scattered over 25 great towns: 4 were reported from Manchester, 3 from Liverpool.

The number of stillbirths notified during the week was 320 (corresponding to a rate of 47 per 1000 births), including 55 in London.

Dr. F. E. Tylecote, professor of systematic medicin in the University of Manchester, was elected on Tuesday a member of the Manchester City Council. Prof. Tylecote has been chairman of the medical boards of both the Manchester Infirmary and the Salford Hospital. He is the third medical member of the City Council.

SMALL-POX AT QUEEN MARY'S HOSPITAL, STRATFORD. In consequence of an outbreak of small-pox a ward and the Lyle maternity wing have been closed. The nursing staff are arranging to attend prospective mothers in the borough of West Ham at their homes, and it is hoped that other prospective patients will be admitted to neighbouring hospitals.

TESTS FOR MOTOR-DRIVERS.—At a meeting held by the National Institute of Industrial Psychology recently, Mr. G. H. Miles, D.Sc., the director, said that the Institute has in preparation a group of tests for motor-drivers. Some of these are based on those which have proved successful in other countries, but there are also a number of new ones "which will assist in making the road safer if they are applied to drivers before their training." They will help, he said, to eliminate the accident-prone man. He appealed to all those interested in road safety to help the Institute in its effort in this direction. The address is Aldwych House, Aldwych, London, W.C.2.

CORRESPONDENCE

A HUGHLINGS JACKSON MEMORIAL.

To the Editor of THE LANCET.

SIR,—A fund is being raised to establish a permanent memorial to Dr. Hughlings Jackson. Among those who are taking action in the matter are many old friends and pupils who revered and loved Jackson, and who recognise to what an extent the pre-eminent position of British neurology in the medical world is due to his work and influence. He was among the great leaders of modern neurology, and it is much to be desired that the inspiration that he gave to so many in his lifetime should be kept fresh and still serve as a stimulus to a younger generation who knew him not.

It is hoped to raise an amount sufficient to provide a permanent endowment for the Hughlings Jackson Lecture, given every third year before the Section of Neurology of the Royal Society of Medicine. Several generous promises of support to such a fund have already been received, but the signatories of this letter feel that an opportunity to subscribe should be given to many who can only be reached through the publicity of the press, and who would certainly wish to show their appreciation of the position which Hughlings Jackson holds in the history of modern medicine. Dr. Wilfred Harris, of 56, Wimpole-street, London, W.1, has consented to act as treasurer of the fund, and subscriptions should be sent to him marked "Hughlings Jackson Memorial Fund."—We are, Sir, yours faithfully,

THOMAS BARLOW,
Past President, Royal College of Physicians.
JOHN ROSE BRADFORD,
Past President, Royal College of Physicians.
JUDSON BURY,
Past President, Association of Physicians.
E. FARQUHAR BUZZARD,
Regius Professor of Medicine, University of Oxford.
JAS. COLLIER,
Senior Physician, National Hospital, Queen-square.
DAWSON OF PENN,
President, Royal College of Physicians.
HENRY HEAD,
Late Editor of *Brain*.
GORDON HOLMES,
Editor, *Brain*.
LESLIE PATON,
President, Section of Neurology, Royal Society of Medicine.
PERCY SARGENT,
Surgeon, National Hospital, Queen-square.
CHARLES SHERRINGTON,
Past President, Royal Society.
JAMES TAYLOR,
Consulting Physician, National Hospital, Queen-square.
S. A. KINNIER WILSON,
President, Section of Psychiatry, Royal Society of Medicine.
WILFRED HARRIS,
Treasurer, Hughlings Jackson Memorial Fund.

May 13th, 1931.

The following is a list of subscribers to the Fund up to May 18th.

Sir Thomas Barlow.
Sir John Rose Bradford.
Dr. Judson Bury.
Dr. James Taylor.
Sir Farquhar Buzzard.
Mr. Leslie Paton.
Sir James Purves Stewart.
Dr. Wilfred Harris.
Mr. Williamson Noble.
Dr. George Riddoch.
Dr. C. S. Myers.
Dr. Gordon Holmes.
Dr. P. C. P. Cloake.
Dr. Anthony Feiling.
Dr. C. P. Symonds.
Lord Dawson of Penn.
Dr. W. J. Adie.
Dr. Aldren Turner.
Sir Percy Sargent.
Dr. James Collier.
Mr. Donald Armour.
Dr. Nathan Raw.
Dr. S. A. K. Wilson.
Dr. Hugh Carleton.
Prof. E. D. Adrian.
Sir William Hale-White.
Dr. W. H. B. Stoddart.
Dr. Douglas McAlpine.
Dr. R. G. Gordon.
Dr. Parkes Weber.
Mr. Wilfred Trotter.
Dr. E. O.Flynn.
Dr. S. M. Payne.
Dr. Ernest Jones.
Dr. Redvers Ironside.
Dr. Risien Russell.
Dr. E. D. Macnamara.
Dr. J. G. Greenfield.
Dr. W. Ritchie Russell.
Dr. Theodore Thompson.
Sir David Drummond.
Dr. H. N. Stoessiger.
Dr. Helen Boyle.
Dr. D. E. Denny-Brown.
Dr. H. S. Le Marquand.
Dr. Campbell Thomson.
Dr. Ruby Stern.
Dr. A. E. Russell.
Prof. Pierre Marie.
Dr. W. J. Wyllie.
Dr. Edward Mapother.
Dr. Neill Hobhouse.
Dr. Tylor Fox.
Dr. Isabel Wilson.
A. W. L.
Dr. P. W. Macdonald.
Dr. T. H. Whittington.
Dr. Guy Wood.
Mr. J. B. Lawford.
Dr. Macdonald Critchley.

The total received and promised amounts at present to something over £700.

POST-OPERATIVE VOMITING.

To the Editor of THE LANCET.

SIR,—In reply to Dr. Macklin's letter, first, I agree that the percentage of sickness is higher than was expected, for had the verbal statements alone of patients and nurses been recorded, the sickness rate of the McKesson cases would have been negligible. And it is here that the incorruptible statistic only tells half the truth, for the general condition of patients is invariably better in comparison. Secondly, if a patient on one occasion produced some clear fluid, that was sufficient to transfer him or her to the "Has vomited" class, many of whom were only sick once.

Now, in respect to the use of ether to augment the gas. I regret that my notes only supply information in 158 out of the 500 cases in the series. Of these, 70 were abdominal operations, and the details were as follows:—

	Sick.		Not sick.	
	Male.	Female.	Male.	Female.
N_2O and O with no ether..	6	12	7	6
" " " " some " ..	6	23	5	5

Less than half received a little ether for part of the time, not more than 2 or 3 drachms. When given, it has been usually just before reaching the peritoneum, sometimes to supplement a badly timed premedication, and sometimes for mechanical reasons such as the renewing of cylinders during a case which was unexpectedly lengthy. The results here are slightly in favour of omitting the ether.

In the four other classes, 26 had a little ether, and 62 got gas and oxygen only, and the results show rather less sickness after gas combined with the minimum of ether than after gas and oxygen alone. But after operations of such varying severity, this number of cases is probably insufficient to give reliable data. Very few were sick more than once, but amongst these was a nervous lady who had an examination under gas and O_2 only. Later the same patient had ventro-suspension, appendicectomy, and a curettage done, a small amount of ether being used in addition, and then was sick twice only.

	Sick.		Not sick.	
	Male.	Female.	Male.	Female.
N_2O and O_2 with no ether.	10	21	13	18
" " " " some " .	5	3	12	6

The tendency is to use as little ether as possible, subject to the surgeon's convenience.

I am, Sir, yours faithfully,

Doncaster, May 12th. B. E. COOK, M.B., Ch.B.

THE DIFFICULT CHILD.

To the Editor of THE LANCET.

SIR,—In thanking you for your very appreciative notice last week (p. 1097) of the lectures of my colleagues and myself on the Difficult Child, may I take this early opportunity of dispelling an unfortunate impression left by one statement which it contains? The annotation states that "one of the peculiar features (of the method) . . . is that the home has become the peculiar province of the social worker, and the psychiatrist never sees the home and does not always see the parents." While the former statement with regard to the home is unfortunately true, the reports which the physician receives are usually very full indeed, and are deliberately detached in outlook. Any personal expression on the part of the social worker is eliminated, and where it creeps in it is usually rejected or treated as an interesting sidelight on the social worker's own temperament. This is by no means a negligible piece of oblique information. The statement that the psychiatrist does not always see the child is most misleading. Not only does he see the parents when they exist or are accessible, but he sees in addition as many members of the family as possible, sometimes uncles and aunts, who from time to time have played a part in the life of the child. Moreover, fully a third of the psychiatrist's time is spent in talks with the family. If this were not the case, the fears expressed in your annotation would indeed be justified.

All workers in this field are realising that the doctor must be the central exchange for the gathering in and interpreting of the data of each case. Failure to recognise this will leave the field ultimately for the social worker to interpret in terms of sociological categories which are still far from clear, and not in biological terms which the broad medical standpoint demands.—I am, Sir, yours faithfully,

EMANUEL MILLER.

Wimpole-street, W., May 18th, 1931.

DURACAINE IN SPINAL ANALGESIA.

To the Editor of THE LANCET.

SIR,—I believe the dose of novocain for spinal injections is not the most that a patient will recover from, but the least that will give effective analgesia. After quoting authorities who support my contention that from 150 to 200 mg. is a sufficient dose for a heavyweight adult with a long spine, Dr. Falkner Hill says: "Yet this child of 6 received 200 mg. How is such a thing possible? The answer is that gliadin made it so." Why, this is just what I am complaining about! What evidence has ever been produced that gliadin delays absorption and prolongs analgesia? If this were the case I should have expected that an amount of novocain which by itself was formerly ineffective in the duration of analgesia, would with the help of gliadin now have become adequate. What are the facts? In order to justify the name Duracaine, the dose must apparently be increased beyond anything previously in use, and in most instances doubled.

If a 4 c.cm. ampoule were graduated in the middle, the top half labelled "planocaine" and the bottom half "duracaine," this would at least be logical and not misleading. Consider the small cross section and short length of the dura in a child 6 years of age. How much cerebro-spinal fluid bathes the thoracic nerve roots in this area? Probably much less than 10 c.cm., for this volume goes far to spread the roots of an adult woman with a short spine.

I will now display 200 mg. of novocain in a choice of strengths for Dr. Falkner Hill's inspection. It represents 5 c.cm. of 4 per cent.; 6⅔ c.cm. of 3 per cent.; 10 c.cm. of 2 per cent.; 13⅓ c.cm. of 1½ per cent.; and 20 c.cm. of 1 per cent. What concentration of novocain would be required to give effective analgesia on the delicate nerve roots of a child of this age? Surely not nearly 7 c.cm. of 3 per cent.?

Dr. Falkner Hill cannot seriously suggest that a state of utter collapse to a pulseless condition is a good preliminary to a surgical operation. Or does he believe in the old time doctor's expedient "Ah Ma'am, you have got to be worse before you are better"? He states that duracaine is a very remarkable liquid, and with this I agree, for a close examination of the various conflicting rituals performed in the administration of these mixtures would lead anyone to suppose that they contained a kind of "ectoplasm" which reacts in a variable manner in the hands of different mediums. But there is a more credible solution.—I am, Sir, yours faithfully,

London, W., May 16th, 1931. W. HOWARD JONES.

SEASONAL VARIATION IN MAN.

To the Editor of THE LANCET.

SIR,—In the notice of my small book in your issue of May 9th (p. 1036), I observe that no mention is made of what is perhaps its salient feature, and as I cannot but think that this feature has significance perhaps you will grant me a few lines in which to explain it. Briefly, the hypothesis developed carries the implication, among others, that the group of phenomena following deficiency of fat-soluble factors (such as factors A and D) is to be thought of as resulting from the working of a normal functional process under abnormal conditions, the abnormal conditions which render this process morbid being the continuance of general functional activity—locomotion, digestion, excretion, &c. This aspect is unfamiliar at present. My point is that when it is entertained and reasoned upon, one begins for the first time to understand the type and sequence of the events characterising this group of disorders, and can even make successful predictions, of a specific kind, as to their nature; which, were the guiding idea without any truth, would be impossible. Predictions of this kind were made, while working out the thesis forming the subject of the book, years before the facts they required could be realised as such. I therefore have some confidence that this biological way of synthesising the morbid events in question will ultimately find favour, since it offers a possible interpretation where none now exists.

I am, Sir, yours faithfully,

Liverpool, May 10th, 1931. EDMUND HUGHES.

SYPHILIS AND YAWS.

To the Editor of THE LANCET.

SIR,—I feel that the myth about sibbens should be stamped out. Dr. Burke's expression in his letter of May 16th referring to sibbens, "I rather regard it as being an European type of yaws," is perhaps sufficiently damning in its faint praise of the idea that this disease, which occurred in Scotland and was described in 1765, was yaws. Anyone who will read the *whole* of the literature upon sibbens, and who is conversant with the accounts of the epidemics of non-venereal syphilis which occurred elsewhere (Mal de Sainte Euphemie, 1727; Pian de

Nerac, 1751; La Radezyge, 1758; Mal de la Baie de St. Paul, 1770; La Facaldina, 1786; Maladie de Fiume, 1800; Maladie de Chavanne Lure, 1829) and who has an up-to-date knowledge of yaws will, I am sure, be convinced without any doubt whatever that sibbens was not yaws and that it was syphilis.

I am afraid, too, that some of the arguments put forward by Dr. Burke in support of the duality of syphilis and yaws cannot be upheld as of any value. He states:—

> In contrast with syphilis the primary lesion of yaws is seldom genital, and it is usually preceded by marked constitutional symptoms. . . . In yaws there is little or no adenitis, the type of exanthem is single, there is great itching. . . . The one disease does not confer immunity against the other.

These statements need amendment. The primary lesion in syphilis among certain native communities may commonly be extra-genital; constitutional symptoms may or may not occur in yaws as in syphilis; adenitis may be quite common in yaws and itching absent. Many types of skin lesion have been described in yaws.

As regards immunity Dr. Burke would appear to be ignorant of the more recent experimental work on cross immunity.

I am, Sir, your faithfully,

HUGH S. STANNUS.

Wimpole-street, W., May 18th, 1931.

AERIS: A NEW NAME FOR LAUGHING GAS.

To the Editor of THE LANCET.

SIR,—I consider that a specific name of an attractive character has long been required for nitrous oxide and its admixtures with oxygen and small percentages of carbon dioxide. If we look carefully at its chemical composition, we find that only those elements which are present in the atmosphere are contained in it. I suggest, therefore, that the word *aeris*—i.e., "of air"—would be a scientific and euphonious designation for this most acceptable and beneficent anæsthetic. The word "gas" is a misleading generic term associated in the public mind with various unpleasant and irrespirable gases. Instead of the ideas "gassed in the war," "an escape of gas," "a gas oven case," "step on the gas," the new name would offer only that of breathing a refreshing and harmless air, which indeed well describes this pleasantest and safest of all inhalations for annulling pain.

I am, Sir, yours faithfully,

BELLAMY GARDNER.

Clarence Gate-gardens, N.W., May 9th, 1931.

APHTHOUS ULCERS.

To the Editor of THE LANCET.

SIR,—In your issue of April 4th (p. 777) Dr. F. A. Phillips asks for information about the treatment of aphthous ulcers of the mouth. At this institute we have found very successful an application of 8 per cent. zinc chloride solution to these areas, which have been previously dried with cotton or gauze; the solution is allowed to remain for a minute and followed with Talbot's solution of iodine. Usually one application will suffice. Occasionally a second application within 24 hours is necessary and in the most severe type a third treatment. Zinc chloride in this strength does not destroy the surrounding healthy tissue, as occurs with silver nitrate or other strong caustic. Talbot's solution is made up of zinc iodide 15 g., iodine crystals 25 g., glycerin 50 c.cm., and water 40 c.cm.

I am, Sir, yours faithfully,

JAMES E. AIGUIER, Ph.G., D.D.S.

The Thomas W. Evans Museum and Dental Institute, School of Dentistry University of Pennsylvania, Philadelphia, May 2nd, 1931.

SWEEPSTAKES FOR HOSPITALS.

To the Editor of THE LANCET.

SIR,—Perhaps it is the prospect of a deluge of sweepstakes that makes St. Thomas's Treasurer sceptical. It is doubtful if legislative sanction would be limited to hospitals alone. There are said to be 48,000 other charities. If but 5 per cent. of charities indulged in sweepstakes we should have 47 a week.

I am, Sir, yours faithfully,

RALPH B. CANNINGS,
Secretary, City of London Maternity Hospital.

May 18th, 1931.

WEST LONDON HOSPITAL.

AT the annual meeting Lord Phillimore pointed out that most of the hospital's previous records were broken last year. More than £73,000 was received for general purposes and the number of in-patients increased by 161. In the out-patient and casualty departments there were 58,000 more attendances than in 1929.

The seventy-fifth anniversary was the occasion of a festival dinner at the Guildhall on May 12th when more than 600 people attended. Prince Arthur of Connaught, the President, who took the chair, spoke of the opportunity of social service which was offered to the hospital in extending the benefits of its treatment to the "middle classes." For the past six years, he said, accommodation had been provided in private rooms for 26 paying patients, and experience had shown that there was a very real demand for such accommodation provided that the charges (including specialists' fees) could be kept moderate. The board had therefore decided that an additional 74 private rooms should be provided, bringing the total to 100. Hitherto, a charge of £5 5*s.* weekly had been made for a private room plus a further sum, varying in amount and assessed by the committee, for medical and surgical fees. When the new rooms were built a flat rate of weekly charges would be adopted. It would vary according to the patient's capacity to pay and would begin with a minimum of £7 7*s.* This would include operative and all other treatment, and once the charge had been assessed the patient need have no further anxieties about his bill. The private beds would be entirely self-supporting, said Prince Arthur, and any surplus derived from them would be devoted to the upkeep of the general wards. In view of the increase in the hospital practice, it was urgently necessary to find less cramped accommodation for the casualty, pathological, and radiological departments. The noise of the traffic in the Hammersmith-road made the wards no longer suitable for patients and these were to be transferred to the back of the hospital. At least £200,000 was needed to carry out alterations and extensions, which had been approved in principle by King Edward's Hospital Fund. Mr. Winston Churchill urgently pleaded the cause of the "black-coated man," who was, he said, least provided for in the giant scheme of national insurance in which this country led the world. The lack of intelligentsia—the man who could write a telegram and send it, the black-coated man—had in his opinion counted largely in the collapse of Russian armies. Sir Henry Simson and Mr. Justice McCardie also spoke. Later in the evening Sir William Wells, chairman of the board of management, was able to announce that £23,800 had already been raised.

ST. MARY'S HOSPITAL, PADDINGTON.—The King of the Belgians has become patron of this hospital in token of his gratitude for the services rendered to the Belgian army during the late war. Between 1914 and 1918 the hospital supplied Belgium with sufficient anti-typhoid vaccine to inoculate 840,000 people, and sufficient "antisepsis" vaccine for more than a million and a quarter persons.

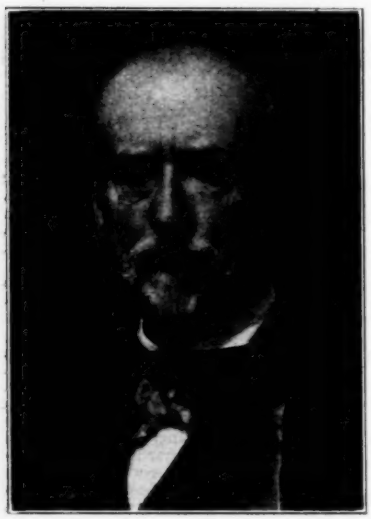
OBITUARY

THOMAS R. GLYNN, M.D., F.R.C.P. Lond.,

EMERITUS PROFESSOR OF MEDICINE, LIVERPOOL UNIVERSITY.

WE recorded last week the death on May 12th of Prof. T. R. Glynn, who was for 40 years Professor of Medicine at the University of Liverpool. The event occurred at his house, Bryn Bella, Tremerchion, N. Wales, in his 91st year.

Thomas Robinson Glynn was born in 1841. He was the son of Dashpen Glynn, a well-known Liverpool shipowner, and received his early education in Liverpool and his medical training in London at St. Bartholomew's Hospital. He graduated in 1865 in medicine at the University of London and began his lifelong association with the city of his birth by election as demonstrâtor of anatomy at the Liverpool school of medicine, associated with the Royal Infirmary, and he was also elected assistant physician to the Childrens' Hospital and physician to the Northern Hospital. In 1871 he was elected to the medical staff of the Royal Infirmary, having taken the M.R.C.P.Lond. Just previously to this date, the beginning occurred of a remarkable development of Liverpool as a medical centre. The Royal Infirmary then contained some 250 beds, and students at the school attached were admitted to the practice of the hospital and also to the practice of the Liverpool Lock Hospital, attendance fitting them for entrance to the qualifying examinations. The movement to raise the status and improve the scope of the school, which was set on foot in 1869, was throughly successful owing to the exertions among others of the Bickersteths, Mitchell Banks, Reginald Harrison and Richard Caton, and with this energetic group Glynn became a valuable coöperator. As is well known the school formed part of the University College of Liverpool, founded in 1881, as a constituent body in the Victoria University. In Liverpool College Glynn received the chair of medicine. Eleven years later the powers and property of University College were transferred from the Victoria University to the new University of Liverpool, and Glynn succeeded to, or continued in, the chair of medicine in the new University, with the result that his tenure of the professorship lasted practically 40 years. During much of this time he lectured regularly on medicine in the medical school, being one of a band of notable teachers, several of whom have just been mentioned by name; while William Carter, Alexander Davidson, and Rushton Parker should be added to the list. Of Glynn, Prof. Hill Abram writes:—"His instruction in his lectures was largely based on bedside work, and to all of the students he was untiring in teaching the value of the correlation of the physical signs and pathological findings. Further, his instruction was so imparted that he was always to his students something more than the brilliant teacher; he was the congenial comrade, appreciative of a story and ready to cap it."



PROF. T. R. GLYNN.

[From a portrait by R. E. Morrison.

Prof. Glynn had a long and distinguished connexion with the Royal College of Physicians of London, where he was elected a Fellow in 1882. He served on the Council in 1907–1909, and delivered the Lumleian Lectures in 1903 and the Bradshaw Lecture in 1913. In the former he took as his subject infective endocarditis, and dealt mainly, almost entirely, with the clinical aspects of the condition, analysing the ætiology and going very thoroughly into post-mortem pathology, where his lessons were made clear to the audience by the handing round of drawings made by himself, exhibiting the lesions that had been discovered at autopsy. The University of Liverpool possesses an instructive series of Glynn's drawings of morbid conditions, notably of h art lesions, among which these illustrations are to be found. Ten years later he delivered the Bradshaw Lecture upon hysteria and discussed the alliance between hysteria and various groups of diseases, making distinctions between hysterical and neurasthenic cases. The teaching here, too, was closely associated with his long clinical experience at the Royal Infirmary. Glynn was elected Emeritus Professor in 1901, and in the same year he retired from the active staff of the infirmary, having reached the age limit, when he was elected consulting physician to the institution. Among the other of his numerous appointments, he was past president of the Liverpool Medical Institution and had held at different times the posts of chief medical officer at the Royal Insurance Company, medical officer to the Customs, consulting physician to the Woolton Convalescent and Hoylake Hospitals, the Liverpool Dental Hospital, and the Catholic Blind Asylum.

We have received the following appreciation from Dr. Charles Macalister:—"It is of the man himself and of the influences of his work and of his personality that I venture to add a few words of appreciation. It was not as a student of the school that I had the advantages of his teaching. As a young practitioner one soon realised that he was a master of clinical medicine, the dynamic power of whose teaching attracted those who were fortunate enough to to be able to attend his clinic. Every man's life involves a history and, so far as our profession is concerned, it was the fact that Dr. Glynn was a great clinical observer and teacher which rendered his life so essentially valuable. He belonged to the days when specialism had not as yet split up the work of the physician. He taught general medicine, of which his knowledge was wide, on broad lines eminently educative not only in the way of impressing clinical facts but, importantly, in that of cultivating the principles of observing the meanings and associations of these facts.

"The value of his influence as a teacher is reflected by the circumstance that very many members of the hospital staffs were his pupils and they carry on the traditions of his work. To his immediate students,

who were attracted in large numbers to his wards, he was an oracle whose word was beyond dispute. I recollect many years ago discussing a case with a young resident who had been one of his pupils. The house physician held very definite opinions about the case in question and, on inviting his reasons, his answer was 'Because Dr. Glynn thinks differently from most people about these cases,' or words to the same effect, which indicated that he meant to hold by the teaching of his master whatever others might think of the matter. I may give an instance of Prof. Glynn's quickness of perception illustrated by his noting an ill-looking boy in the out-patient department becoming distressed by a draught from an opening door. It at once occurred to him that the lad might be suffering from rabies which proved to be the case. When calling on Dr. Glynn last year I reminded him of the incident, which must have happened more than 40 years ago, and he was very interested to hear that I remembered it. His teaching was largely based on his knowledge of pathology and, at the Medical Institution and in his classrooms, his expositions were frequently illustrated by excellent water-colour paintings of specimens of fresh preparations and also of clinical conditions.

"Prof. Glynn's life was a busy one. A large consulting practice, added to his professorial and hospital work, afforded him little time for leisure. In the 'nineties it was thought hardly proper for any well-known citizen in a wide circle round Liverpool to die without being seen by Glynn or by another eminent contemporary physician. His temperament, however, was one of great activity and it would have been impossible for him to leave any time unoccupied, and busy as he was he found opportunities for cultivated studies. He was an artist of considerable merit, had a fine appreciation of colour, and produced many good landscapes which, in some respects, resembled those of Robert Fowler, R.I., a friend who was frequently his guest during the summer vacations. His work was at times exhibited at the Royal Liver Society meetings and the Liverpool Autumn Exhibitions. Further, he had a great love of music; he was an organist, he delighted in singing, and retained his singing voice even when he was over 80 years of age. His humour permeated both the professional and social sides of his life. He, Mitchell Banks, and Edgar Brown, were a never failing source of entertainment at social functions; at the Chester Medical Society's annual dinners, for example, the interchange of witty talk between these three was as much an annual event as the dinner.

"On the death of an old friend memories of the past crowd in to the mind, but it will be sufficient here to testify to the work of his long life, given to the establishment of indelible traditions; we mourn that we shall neither see nor hear again one who has been a devoted friend to, and a distinguished member of, our profession."

MEMORIAL TO A MEDICAL MAN.—The board room in the new block at the Boscombe branch of the Royal Victoria and West Hants Hospital is to be a memorial to the late Mr. Arthur Heygate Vernon who joined the surgical staff of Boscombe Cottage Hospital in 1890, and had been vice-president, chairman of the board, and chairman of the house committee of the Victoria Hospital. The new block will more than double the out-patients' departments and will provide about 40 private paying wards and accommodation for special departments. The cost will be £120,000, towards which £80,000 has already been obtained. Of the 4136 in-patients admitted last year, an increase of 34, there were 262 victims of motor accidents.

MEDICINE AND THE LAW.

Pay-beds at the Miller General Hospital.

ON May 15th Mr. Justice Farwell gave his decision on the application of the Miller General Hospital for South-East London to establish a scheme under which the number of pay-beds might be increased from 15. There had been an adjournment from the previous week in order that the court might be informed of the accounts for 1930. These accounts showed that the past year was exceptional owing to large windfalls in legacies and donations. Thanks to these and to income from the 15 pay-beds (at £7 a week each), which the 1929 scheme of the Charity Commissioners had sanctioned, there was a profit of over £2000 for 1930. The existence of a profit imperilled the success of the application to the court, because the court has no jurisdiction to interfere except in the case of an emergency involving the failure of the existing scheme. At the same time, though the hospital had not proved the emergency, the court would naturally not wish to wait till disaster occurred before taking action. Mr. Justice Farwell, after reasserting the expressed objects of the hospital "to provide free medical and surgical relief and assistance for and to the necessitous poor" of the district, and after emphasising the principle that these objects must not be interfered with, was willing to look at the average financial results over a period of five years. The average result was a considerable deficit and the court was satisfied that it was necessary to make some alteration of the scheme. The court sanctioned a temporary increase of the number of pay-beds from 15 to 20 for 12 months, with liberty for the management to apply afresh after that time. The beds would be in two wards, to be used primarily for paying patients only. The hospital had asked that where the doctors thought that paying cases required separate rooms the cases might occupy some of the eight separate rooms available for that purpose. This request also was sanctioned.

Fraud Charge against Psychologist Fails.

After several days' hearing before Mr. Justice Horridge and a special jury, allegations of fraudulent misrepresentation brought by a patient against a medical practitioner failed. The plaintiff's case was that, while she was undergoing psychological treatment by the defendant, he found out from her that she had over £3000 at her bank; he told her (it was alleged) that he was chairman of a certain company, falsely representing that the company had valuable sulphur deposits in the Eastern Mediterranean, that its prospects were wonderful, and that he himself had invested in it every penny he could spare. She said that, believing these representations to be true, she had invested £1000 in the company. The plaintiff also claimed damages for alleged negligence and for alleged breach of duty by the defendant as her medical adviser. On the other hand, the defendant denied all the charges and counterclaimed for his fees. His counsel described the action as a wicked and shocking conspiracy to draw a medical practitioner to the court on a charge of fraud in the belief that he would rather pay up than face a jury. Cross-examined by Sir Patrick Hastings, the defendant frankly agreed that the company had never paid a dividend, never earned a penny, and possessed no tangible assets. But he had done his best to explain the matter clearly to the plaintiff; he had done nothing underhand;

he had not tried to persuade her to put money into the company; on the contrary, he had mentioned the matter to her husband and had strongly advised against the investment. After evidence had been given on both sides, the judge summed up. He pointed out the serious nature of the charge of fraud; the case was "all or nothing." The jury found in favour of the defendant on all issues, but added an expression of opinion that the defendant was unwise in accepting from a patient money for a concern in which he was interested.

Allegations of Negligence against Surgeon Withdrawn.

On May 11th Mr. Justice McCardie approved the discontinuance of the action of Moore and wife *v.* Ligat, in which allegations of negligence were made against a surgeon. Mrs. Moore's claim arose from an accident which unfortunately caused her to lose the sight of one eye. She underwent an operation in 1927 for turbinectomy and a deflected nasal septum. She attributed her loss of sight to the use of undue force during the operation. The defence was that this was an occurrence which could not have been guarded against and was due to pre-existing disease. At a previous trial before Mr. Justice Horridge, which lasted from March 31st to April 4th of last year, the jury had disagreed. Plaintiff's counsel now stated that, with a fuller knowledge of the facts than had been available in the earlier stages of the case, he had advised his client to accept an ex gratia payment (by which she would receive £75 clear) offered by the defence. The offer was in no sense an admission of the alleged negligence; counsel made it clear that all allegations of negligence were entirely withdrawn. Defendant's counsel explained that the surgeon's object naturally was to vindicate his professional reputation. That object had been attained and, as the defence was conducted by the Medical Defence Union, the defendant was not concerned in any matter of money. Mr. Justice McCardie assented with pleasure to the termination of the action; he was satisfied that all allegations had been withdrawn and he considered that the cheapest course had been followed. The result must certainly have been satisfactory to the defence. The hearing—it was stated—was likely to last four or five days. None of this expense, presumably, could have been recovered from the plaintiff, for whom leading and junior counsel were appearing under the Poor Persons Rules without fee.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

REGISTRATION AND REGULATION OF OSTEOPATHY.

ON May 12th in the House of Commons the Order for the second reading of the Registration and Regulation of Osteopathy Bill was read and discharged and the measure was withdrawn.

This Bill was introduced by Mr. W. M. ADAMSON, the Member for Cannock, and obtained a first reading in the House of Commons on Feb. 11th. It is understood that the Bill was not regarded with favour by the British Osteopathic Association, and Mr. Adamson was not prepared to proceed with the measure unless there was agreement among osteopaths themselves.

HOSPITAL LOTTERIES.

In the House of Commons on Tuesday, May 19th, Sir WILLIAM DAVISON asked leave to introduce the Hospitals Lotteries Bill, a measure to authorise the raising of money by means of lotteries for the support of hospitals. He said that he had sent to the Home Secretary a memorial signed by 70 Members of the House belonging to all parties asking him to take this matter into consideration. He had also furnished Mr. Clynes with the results of a questionaire which was recently sent out by the Special Appeals Committee of St. Bartholomew's Hospital to some thousands of representative people, including supporters of the hospital. The result of that questionaire to date was that 3125 persons were stated to be in favour of a lottery for the hospital and only 61 were against. Meanwhile, nothing was being done and British hospitals were in the greatest need of funds for building, equipment, and maintenance. He was aware that a number of Members of the House of Commons considered that hospitals should be a charge upon the State. But even they must surely realise in view of the statements of the Chancellor of the Exchequer in presenting his Budget that it was not practical politics in present financial conditions to provide State money for hospitals. The chairman of a large hospital, in a letter to the *Times* a few weeks ago, pointed out that hospitals were being seriously prejudiced by reason of the uncertain state of the law in regard to this matter, and he added that they were losing subscriptions both from those in favour of lotteries and from those who were opposed to them. That supported the view that it was time that this uncertainty of the law should be ended, at any rate so far as hospitals were concerned. Immense sums have been raised in Dublin in aid of the Southern Irish Hospitals.

AN UNAMBITIOUS MEASURE.

The Bill which he was asking leave to introduce was an unambitious measure. It did not attempt to modify or remove the many anomalies relating to lotteries, raffles, and sweepstakes. It was a short permissive measure which left the law as it stood until such time as the Government were in a position to deal with it. The Bill provided that notwithstanding anything in the existing law a lottery might be held under regulations to be approved by the Home Secretary for the benefit of British hospitals something on the lines of the Irish Free State hospitals lottery, but with improved regulations as a result of experience gained in the conduct of that lottery. This Bill would not refer to Northern Ireland. There was nothing inherently vicious in the idea of a lottery. It was bad for the country that the law should be openly broken by all classes, and with general approval, as it was being to-day. This Bill would be of immense benefit to the hospitals and through them to the sick and suffering people of the country.

ARGUMENTS IN OPPOSITION.

Mr. FOOT, who opposed the Bill, said that it prejudged inquiry and demanded from the House a verdict before the evidence had been given. The Bill could not be limited to hospitals. If it was right for hospitals, it was right for the blind, for orphanages, and for every beneficent enterprise, national and municipal. This was a charity lottery which would not achieve its purpose, but would dry up the resources of charity. The man who would buy a sweepstake ticket would be tempted to feel that he had discharged his responsibility. In the Dublin sweepstake of November, 1929, £798,433 was raised from the sale of tickets, and of that sum £249,000 went in expenses and organisation, and £417,000 in prizes. Out of the £798,000 the hospitals took only £131,000. Out of each 1*s.* ostensibly raised to help the sick, 2*d.* went to the avowed purpose of the scheme. A short time ago the Earl of Onslow, at one time chairman of the Voluntary Hospitals

Commission, wrote to the *Times* setting out his reasons for condemning the proposal as disastrous to the financial interests of the hospitals of this country. The same opinion was given by the chairman of the Royal London Ophthalmic Hospital, and by Sir Arthur Stanley, Treasurer of St. Thomas's Hospital. The *Manchester Guardian* sought the opinion of 13 prominent members of the Manchester Hospital boards. Two declared in favour of the proposal, one was neutral, and ten declared against it. The House Governor of the Charing Cross Hospital, Mr. Philip Inman, in an interview this month, said that he and the hospital would have neither part nor lot in any such schemes. Their reasons were not simply moral ones, although they weighed very considerably. Looking at the matter simply from a business standpoint, they believed that the gains would be outweighed by the losses. This proposal, Mr. Foot added, screened cupidity with a thin smear of charity. The Good Samaritan would have taken a very different place in history if he had sought to discharge his responsibility to his distressed neighbour by spending his 2*d*. on the purchase of a ticket in the Jericho Hospital Sweepstake. Speaking a few weeks ago, Sir Alan Anderson, chairman of the Hospital Saving Association, said: "Illness is not a gamble, and it would not accord with the principles on which the Hospital Saving Association appeals to its members to base the finance of healing on the unstable foundation of gambling." The hospitals of this country ought not to be built on the very shifting and uncertain sands of chance and cupidity.

Leave to introduce the Bill was refused by 181 votes to 58.

WORKMEN'S COMPENSATION BILL.

On May 19th, in the House of Lords, Lord NOEL-BUXTON moved the second reading of the Workmen's Compensation Bill (which has already passed through the House of Commons). The object of the Bill was, he said, to repeal Section 9 of the Workmen's Compensation Act, 1925, and to substitute for it a new subsection. This subsection provided that if a workman had so far recovered from his injury as to be fit for employment of a light character, but had failed to obtain it, and it appeared to the county court judge that his failure was a consequence, wholly or mainly of the continuing effects of the injury, the judge should order that the workmen's incapacity should be treated as total incapacity resulting from the injury, and therefore entitled to continuing compensation. The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, MAY 13TH.

Road Traffic Act and Public Safety.

Mr. FREEMAN asked the Minister of Transport whether he could make any report on the working of the recent Road Traffic Act; and whether it was securing increased safety for the travelling public.—Mr. H. MORRISON replied: To the best of my knowledge the provisions of the Road Traffic Act are working satisfactorily, but some time must necessarily elapse before their full effect can be judged. As regards public safety, I understand that the record of accidents in the metropolitan police district and the City of London show a reduction for the first quarter of this year of 10 per cent. in the case of fatal accidents and of more than 10 per cent. in the case of non-fatal accidents compared with the corresponding period of last year. The corresponding figures for the remainder of the country are not yet available.

THURSDAY, MAY 14TH.

The Sandstone Silicosis Fund.

Mr. NEIL MACLEAN asked the Home Secretary the cost of administering the sandstone silicosis fund for the last complete year; and the amount paid out in compensation during the same period.—Mr. CLYNES replied: It appears from the revenue account of the fund for 1930 that the total administrative expenses incurred in that year in connexion with the collection of levies and payment of compensation claims amounted roughly to £2700. This figure does not include the cost of the medical board or of the local joint committees which determine claims. These expenses, which amounted roughly to £7600 can hardly, I think, be regarded as expenses of administering the fund. The amount paid out in compensation during the year was £5580, odd, and the amount collected in levies was £48,715.

Teachers and Physical Culture Training.

Sir WILLIAM JENKINS asked the President of the Board of Education what facilities there were in England and Wales for training men in physical culture, and whether there was a sufficient supply of teachers to meet the demand in the schools; also what grants were being made towards physical training.—Mr. LEES-SMITH replied: Physical training is included in the course of every ordinary student at a two-year training college, and of a large and increasing number of graduates who take a one-year course of training. All the colleges referred to are aided by grant.

Epileptic and Mentally Defective Children.

Mr. ALBERY asked the President of the Board of Education what accommodation in public institutions was available for epileptic children in England; and what accommodation was available in Kent.—Mr. LEES-SMITH replied: There are six residential special schools for epileptic children certified by the Board of Education, providing altogether accommodation for 609 children. None of these schools is situated in Kent, but most of them admit children from any area. Provision is also made in certain institutions for mentally defective children for cases in which mental defect is combined with epilepsy.

Mr. ALBERY: Is the right hon. gentleman aware that there is a considerable shortage in accommodation and a very long waiting-list of patients, and can anything be done to remedy this state of affairs?

Mr. LEES-SMITH: I have made inquiries and I find that that is the case. At present the Board offers a grant of 50 per cent. to any local authority or voluntary association establishing these schools, and I hope that the result of that grant will be an increase in accommodation.

Bovine Tuberculosis in Man.

Lieut.-Colonel FREMANTLE asked the Minister of Health if he would arrange for the Ministry of Health Memorandum on Bovine Tuberculosis in Man to be issued as a Parliamentary publication and included in the Pink Paper.—Mr. GREENWOOD replied: This memorandum has already been published as a non-Parliamentary Paper, and it is available to hon. Members on application to the Stationery Office on the usual green form.

Captain PETER MACDONALD asked the Minister of Health whether he proposed to introduce legislation regulating the production and sale of milk with a view to reducing the incidence of bovine tuberculosis in human beings.—Mr. GREENWOOD replied: I am considering this question in consultation with the Minister of Agriculture and Fisheries.

Infant Mortality in London.

Mr. WEST asked the Minister of Health which three London metropolitan boroughs had the highest infantile mortality-rates.—Mr. GREENWOOD replied: According to the most recent available returns (1926–30) Paddington Stepney, and Shoreditch are the metropolitan boroughs with the highest infantile mortality-rates.

Claims of Married Women and Health Insurance.

Sir KINGSLEY WOOD asked the Minister of Health if he could give, for the last convenient date, the percentage of claims or other material particulars concerning the claims of married women on the funds of approved societies under the National Insurance Act; and how these compared with the original estimate of the Government actuary and the basis upon which married women's contributions were calculated.—Mr. GREENWOOD replied: The claims of married women have not in recent years been separately tabulated, but in view of the facts brought out in the report of the Government actuary on an investigation into the experience of a representative sample of the insured population (C.M.D. 3548) arrangements have been made for the separate tabulation of these claims in the future. In reply to the second part of the question, the report referred to showed that in the year 1927 the sickness claims of married women were 130 per cent. of the provision made by the valuation standard, while those of unmarried women were 117 per cent. In regard to disablement benefit the respective percentages were 171 and 119. In the case of both benefits the relative increase in the claims of married women over the previous six years had been much more marked than in the case of the unmarried. For a due appreciation of these figures it should be added that the valuation standard itself provides for a considerably greater amount of claims from the married than from the unmarried.

MONDAY, MAY 18TH.

Experiments on Living Animals.

Mr. FREEMAN asked the Home Secretary whether in the performance of experiments on living animals, who decided whether the experiment was calculated to give pain; and if the performer was the only judge.—Mr. CLYNES replied: No. In the case of this Act, as of all others, people have to consider for themselves whether what they propose to do is in accordance with the law; but if they infringe the provisions of the Act they are liable to have legal proceedings taken against them and the Court decides whether the experiment is or is not calculated to cause pain. Experience shows that people who propose to perform experiments which might by any possibility be regarded as calculated to cause pain are anxious to comply with the requirements of the Act in order to be on the safe side.

Factory Inspection in India.

Mr. DAY asked the Secretary of State for India the number of whole-time or part-time factory inspectors employed in India; and how many were women.—Mr. WEDGWOOD BENN replied: At the beginning of this year the number was 47, including one woman inspector in Bombay.

TUESDAY, MAY 19TH.

Patent Medicines.

Mr. HAYDN JONES asked the Minister of Health whether he proposed to introduce legislation to give effect to the recommendations of the Select Committee on Patent Medicines, whose report was issued in 1914.—Miss LAWRENCE replied: My right hon. friend fears that owing to the present state of business the Government are unable to undertake to introduce legislation on this subject during the present session.

ECCLES AND PATRICROFT HOSPITAL.—There is said to be a danger that, for lack of means, this institution may shortly have to close many of its beds, although it has a waiting-list of 300. The difficulty is officially attributed to the "refusal of the Lancashire insurance committee and the approved societies of financial support for the treatment of their members who are patients"; 61 per cent. of the in-patients come under this head.

INTERNATIONAL POPULATION UNION.—The second general assembly of the International Union for the Scientific Investigation of Population Problems will take place under the presidency of Prof. Raymond Pearl, at the house of the Royal Society of Arts, John-street, Adelphi, London, from June 15th to 18th. The first three mornings will be given to the business of the Union, but the afternoons will be available for reports and papers. The afternoon on June 15th will be devoted to Population and Food Supply. On the 16th Prof. F. A. E. Crew and Mr. Eldon Moore will introduce a report on Differential Fertility. On the 17th the Vital Statistics of Primitive Races will be considered, and on the 18th both morning and afternoon will be free for individual communications. Among countries to be represented are the United States, Belgium, Denmark, France, Germany, Great Britain, Holland, Spain, Sweden. The organising committee of the general assembly is the British Population Society, whose chairman is Sir Bernard Mallet. Application for tickets may be made to the hon. secretary, Mr. Eldon Moore, at Eliot Vale House, Blackheath, Kent.

ROYAL MEDICAL BENEVOLENT FUND GUILD.—A garden party in aid of the educational work of this Guild will be held in the Royal Botanic Gardens, Regent's Park, London, N.W., on Tuesday, June 2nd, from 2.30 to 8.30 P.M. The Duchess of York, patroness of the Guild, has consented to be present. The band of the R.A.M.C. will play; there will be hospital side shows and other entertainments; and purses will be presented. Tickets of admission may be had from the Hon. Treasurer, Mrs. E. D. D. Davis, 46, Harley-street, W. 1. Prices are reduced if they are purchased in advance.

The Guild, or women's branch of the R.M.B.F., has its offices at Tavistock House, Tavistock-square, W.C. 1, and coöperates by giving help to those beneficiaries of the Fund who are recommended to it by the Fund case committee.

The education of children and the subsequent training of students to earn their own livelihood are the Guild's special care, and in addition to fees paid, schools and training centres are recommended, and holidays also are arranged when necessary. The Guild raises its own funds and depends entirely on voluntary subscriptions and donations.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
The Society's house and Library will be closed from Saturday, May 23rd, to Monday, May 25th, both days inclusive.
TUESDAY, May 26th.—5 P.M., MEDICINE. Election of Officers and Council.
WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Election of Officers and Council. Paper: Dr. G. P. Male: Gland Grafting in Veterinary Practice.
THURSDAY.—8.30 P.M., UROLOGY. Election of Officers and Council. Paper: Mr. A. Ralph Thompson: Further Considerations Relative to Congenital Deformities of the Lower Urinary Tract.
FRIDAY.—5 P.M., DISEASES IN CHILDREN. (Cases at 4.30 P.M.) Election of Officers and Council. Clinical Meeting: Cases will be shown. 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Election of Officers and Council. Paper: Sir William Hamer: The Crux of Epidemiology.
SATURDAY.—THERAPEUTICS AND PHARMACOLOGY at the University, Cambridge. Election of Officers and Council. Short communications: F. B. Parsons: The Action of Avertin on the Liver. S. E. F. Gooding: The Action of Radon on Isolated Tissues. E. G. Holmes: and C. A. Ashford: Cerebral Metabolism. J. Heller: Sensitisation of the Uterus. W. E. Dixon and J. Heller: Some New Observations on Intracranial Pressure. N. Myers: The Treatment of Toxæmia. J. C. Hoyle: The Action of Histamine.

MEDICO-LEGAL SOCIETY.
THURSDAY, May 28th.—8.30 P.M. (at 11, Chandos-street, W.), Dr. Nathan Raw: Dangerous Drugs. To be followed by a discussion.

LIVERPOOL MEDICAL INSTITUTION.
THURSDAY, May 28th.—4.30 P.M., Mr. D. McCrae Aitken: Principles of Rest and Exercise in the Treatment of Joints. (Hugh Owen Thomas lecture.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

INTER-STATE POST-GRADUATE ASSEMBLY OF NORTH AMERICA.
(Lectures in the Barnes Hall, Royal Society of Medicine.)
TUESDAY, May 26th.—10 A.M., Sir Thomas Horder: Some Medical Hints. 11 A.M., Mr. Donald Armour: Some Points on the Treatment of Head Injuries. 12 noon, Dr. J. Strickland Goodall: The Myocardium, with Special Reference to the Right Ventricle.
WEDNESDAY.—10.15 A.M., Mr. A. Lawrence Abel: Cancer of the Rectum and Cinematograph Demonstration of the Abdomino-Perineal Operation. 11.30 A.M., Mr. Victor Bonney: A Gynæcological Talk. In the afternoon of both days visits will be made to London hospitals.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
TUESDAY, May 26th, to SATURDAY, May 30th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, M.R.C.P. Special evening lectures at 8.30 P.M. Tues., Dr. W. J. Adie: Diseases of the Nervous System (II.). Fri., Dr. W. J. Adie (III.).—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Fri., Gynæcological operations by Mr. L. C. Rivett at 2 P.M. No fee.—HAMPSTEAD GENERAL HOSPITAL, Bayham-street, Camden Town, N.W. Fri., 2 P.M., Dr. H. V. Morlock: Some Recent Advances in the Diagnosis and Treatment of Pulmonary Diseases. Cases. No fee.—Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
TUESDAY, May 26th.—Operations. 10 A.M., Medical Ward Visit, Dental Department. 11 A.M., Throat Operations. 11.30 A.M., Surgical Clinical Demonstration. 2 P.M., Medical, Surgical, Throat Out-patients, Operations, Medical Ward Visit.
WEDNESDAY.—Medical Ward Visit, Children's Medical Out-patients. 2 P.M., Medical, Surgical, and Eye Out-patients, Gynæcological Operations. 4.45 P.M., Venereal Diseases.
THURSDAY.—10 A.M., Neurological Department. 11.30 A.M., Treatment of Fractures. 2 P.M., Medical, Surgical, and Eye Out-patients, Genito-Urinary Department. Operations.
FRIDAY.—10 A.M., Medical Ward Visit, Skin and Dental Departments. 12 noon, Medical Lecture. 2 P.M., Medical, Surgical, and Throat Out-patients. Operations.
SATURDAY.—9 A.M., Throat Operations. 10 A.M., Medical Ward Visit, Surgical and Children's Medical Out-patients.

NATIONAL HOSPITAL, Queen-square, London, W.C.
TUESDAY, May 26th.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Critchley; Cerebral Vascular Disease (4).
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Cerebral Vascular Disease (5).
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Julian Taylor: Trigeminal Neuralgia.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, May 27th.—4 P.M., Sir John Collie: Backache.

NATIONAL COUNCIL FOR MENTAL HYGIENE.
WEDNESDAY, May 27th to FRIDAY.—(At the Central Hall, Westminster. Biennial Conference. The Human Factor as it effects International Problems, Crime, Industry, Social Services and Education.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.
WEDNESDAY, May 27th.—5.30 P.M., Dr. S. Lomholt (Copenhagen): The Effects of Concentrated Ultra-violet Light upon the Skin and its Uses in Dermatological Therapy (annual oration). 7.30 P.M., Annual dinner at Kettner's Restaurant.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
THURSDAY, May 28th.—5 P.M., Dr. J. A. Willett: The Importance of Antenatal Care.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.
TUESDAY, May 26th.—5 P.M., Col. S. P. James: The New Method of Studying Malaria and Some of its Results.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.
THURSDAY, May 28th.—3 P.M., Dr. F. L. Golla: Clinical Demonstration.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Keppel-street, Gower-street, W.C.
WEDNESDAY, May 27th.—5 P.M., Dr. R. H. Crowley: Child-guidance.
THURSDAY.—5 P.M., Dr. F. C. Shrubsall: Mental Deficiency from the Social, Legal, and Educational Aspects.
FRIDAY.—5 P.M., Dr. N. Howard-Mummery: An Industrial Welfare Scheme.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital for Diseases of the Skin, Leicester-square, W.C.
THURSDAY, May 28th.—5 P.M., Dr. A. M. H. Gray: Sclerema.
FRIDAY.—5 P.M., Dr. W. J. O'Donovan: Tuberculosis of the Skin.

UNIVERSITY OF BIRMINGHAM.
WEDNESDAY.—4 P.M. (in the Large Theatre of the Medical Faculty Buildings, Edmund-street), Sir Hubert Bond: Some Correlations between General and Psychological Medicine. (Third of five William Withering Memorial Lectures.)
FRIDAY (at the Queen's Hospital).—3.30 P.M., Prof. Emanuel: Cases Illustrating Types of Cardiac Failure.

Appointments

BURT, D. S. D., M.B. St. And., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Thirsk.
GUY, JOHN A. C., M.B. Edin., D.P.H., County Medical Officer to the Argyll County Council.

Vacancies

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110. Also Dental Surgeon.
Barnet, Herts, Wellhouse Hospital. Asst. M.O. At rate of £200.
Beckenham, Bethlem Royal Hospital, Monks Orchard, Eden Park.—Two Res. H.P.'s. Each £25 per quarter.
Birmingham, Highbury Hospital, Moseley.—Res. Asst. M.O. £300.
Blackburn County Borough.—Asst. M.O.H. £600.
Blackburn Royal Infirmary.—Fourth H.S. £150.
Bolton Infirmary and Dispensary.—Asst. Res. Surg. O. £200. Also two H.S.'s. Each at £150.
Brighton, New Sussex Hospital for Women and Children.—Hon. Asst. Ophth. Surgeon. Also H.P. and H.S. Each at rate of £50.
Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Burton-on-Trent, Bretby Hall, Orthopædic Hospital.—Locum Res. Asst. M.O. At rate of £350.
Bury County Borough.—Asst. M.O.H., &c. £500.
Cardiff, Llandough Hospital.—Med. Supt. £750.
Cardiff Royal Infirmary.—Aural H.S. and Cas. Surg. O. Each at rate of £75.
Carlisle County Borough.—Asst. M.O.H. £650.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Hon. Assts. to Out-patients' Dept.
Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.
Chesterfield and North Derbyshire Royal Hospital.—Hon. Surgeon. Also Cas. O. At rate of £200.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.
Coventry and Warwickshire Hospital.—Res. H.S. £125.
Derby, Derbyshire Hospital for Sick Children.—Res. H.S. and Res. H.P. At rate of £150 and £130 respectively.
Doncaster Royal Infirmary.—H.S. At rate of £175.
Dorchester, Dorset County Hospital.—H.S. At rate of £160.
Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.
Durham County Hospital.—H.S. £150.
East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O. At rate of £200.
Elizabeth Garrett Anderson Hospital, Euston-road.—Ophth. Surg.
Evelina Hospital for Children, Southwark, S.E.—H.P. At rate of £120.
General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.
Gloucester, Gloucestershire Royal Infirmary, &c.—H.S. At rate of £120.
Golden-square, Throat, Nose and Ear Hospital, W.—Clin. Asst.
Grosvenor Hospital for Women, Vincent-square, S.W.—Gynæcologist.
Hammersmith Hospital, Ducane-road, Shepherd's Bush, W.—Res. Med. Supt. £950.
Hendon U.D.C.—Part-time Anæsthetist for Dental Clinic. 2 guineas per session.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £100.
Hove, Lady Chichester Hospital.—H.P. At rate of £100. Also Jun. H.S. £50.
Huddersfield Royal Infirmary.—H.S. At rate of £150.
Hull Royal Infirmary.—Third H.S. At rate of £150.
Ilford, King George Hospital.—Two H.S.'s. Each at rate of £100.
Inverness Royal Northern Infirmary.—H.P. At rate of £100.
King's Lynn, West Norfolk and King's Lynn Hospital.—Jun. H.S. At rate of £125.
Kingston-on-Thames, Kingston and District Hospital.—Second and Third Asst. Res. M.O.'s. At rate of £300 and £250 respectively.
Kingston-upon-Hull, Beverley-road Institution.—Asst. M.O. £300.
Lancaster Royal Infirmary.—Jun. H.S. £130.
Leeds Hospital for Women.—H.S. At rate of £50.
Leicester, City Mental Hospital, Humberstone.—Jun. Asst. Res. M.O. £100.
London, Female Lock Hospital, 283, Harrow-road, W.—H.S. at rate of £150.
London Temperance Hospital, Hampstead-road, N.W.—Cas. O. and H.P. At rate of £120 and £100 respectively.
Macclesfield, Cheshire County Mental Hospital, Parkside.—Asst. M.O. £350.
Manchester, Abergele Sanatorium.—Asst. Med. Supt. £600.
Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Sen. Res. M.O. and Jun. Res. M.O. At rate of £125 and £50 respectively.
Manchester Ear Hospital, Grosvenor-square, All Saints'.—H.S. £150.
Manchester, Royal Children's Hospital.—Sen. M.O. for Out-patients' Dept. £300.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Manchester Royal Infirmary.—H.S. for Central Branch, Roby-street. At rate of £100.
Manchester, Withington Hospital.—Two Asst. M.O.'s. Each at rate of £275.
National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Hon. Asst. Radiologist.
Newcastle-upon-Tyne, Hospital for Sick Children.—H.S. At rate of £100.
Nottingham General Hospital.—Cas. O. At rate of £200.
Oldham Royal Infirmary.—H.P. and Cas. O. Each at rate of £175.
Plymouth, South Devon and East Cornwall Hospital.—H.P. At rate of £120.
Queen Mary's Hospital for the East End, E.—Hon. Asst. Obstet. Surgeon and Gynæcologist. Hon. Neurologist. Res. M.O. and Cas. O. At rate of £200 and £150 respectively. Also H.P.'s and H.S.'s. At rate of £120.
Queen's Hospital for Children, Hackney-road, E.—H.P., H.S., and Cas. O. All at rate of £100.
Reading, Royal Berkshire Hospital.—Res. Anæsthetist. At rate of £150.
Rotherham Hospital.—Cas. H.S. £150. Also Sen. H.S. £200.
Royal Eye Hospital, St. George's-circus, Southwark, S.E.—Asst. H.S. At rate of £100.
Royal Free Hospital, Gray's Inn-road, W.C.—Res. H.P.'s and H.S.'s to Special Depts. Also Unit Anæsthetist and Cas. O. and District Obstet. Asst. £100.
Royal London Ophthalmic Hospital, City-road, E.C.—Six Out-patient Officers. Each £100.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
St. Mary's Hospital, W.—Cas. H.S. At rate of £100.
Salford Royal Hospital.—Hon. Dermatologist.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—Hon. Surg. to Out-patients.
Sheffield Children's Hospital.—H.P. and Third Res. M.O. At rate of £100 and £80 respectively.
Sheffield Royal Infirmary.—Hon. Asst. Surgeon and Physician.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. £150.
Truro, Royal Cornwall Infirmary.—H.S. £170.
Walsall County Borough.—Asst. M.O.H. £500.
West Bromwich, Hallam Hospital.—Res. H.S. £250.
West London Hospital, Hammersmith-road, W.—H.P. and two H.S.'s. All at rate of £100.
Westminster Hospital Annexe, 66, Fitzjohn's-avenue, Hampstead.—M.O. At rate of £300.
Windermere, Ethel Hedley Orthopædic Hospital for Crippled Children.—Res. H.S. £150.
Windsor, King Edward VII. Hospital.—Two H.S.'s. Each at rate of £100.
Wolverhampton, Royal Hospital.—H.S. At rate of £100.
Worcester General Infirmary.—Jun. H.S. £120.
Wrexham and East Denbighshire War Memorial Hospital.—3 Res. H.S.'s. Each at rate of £150.
York County Hospital.—H.S. Also Res. Anæsthetist and Asst. H.S. Each £150.

COMMONWEALTH FUND FELLOWSHIPS.—Among recipients of Fellowships granted by the Commonwealth Fund to enable British graduates to study in American universities for the two years beginning next September is J. H. Biggart, M.B., of Queen's University, Belfast, who is going to Johns Hopkins University.

MEDICAL NEWS

Royal College of Physicians of London.

At a meeting of the College on May 14th, with Lord Dawson, the President, in the chair, the following lectureships were announced: Lumleian (1932), Dr. C. E. Lakin; Goulstonian (1932), Dr. L. J. Witts; FitzPatrick (1932), Dr. James Collier; and Croonian (1933), Dr. W. E. Dixon.

A diploma in gynæcology and obstetrics was granted, jointly with the Royal College of Surgeons, to Wallace Freeborn, M.B. Sydney.

The College will be closed on Saturday, May 23rd and Monday, May 25th.

Royal College of Surgeons of England.

A meeting of the council was held on May 14th, with Lord Moynihan, the President, in the chair. The honorary gold medal of the College was conferred on Mr. G. Buckston Browne in recognition of his valuable contributions to the surgery of the genito-urinary system, and of his great liberality in the endowment of an institution for surgical research.

A diploma of Fellowship was granted to Alfred Richard Denis Pattison, of Durham University. A diploma in gynæcology and obstetrics was granted jointly with the Royal College of Physicians to Wallace Freeborn, M.B., Sydney. Diplomas of membership were granted to 161 of the 164 candidates whose names were given in our issues of May 9th and 16th (pp. 1059 and 1113) as recipients of the L.R.C.P. (excepting Inez E. Banner, W. Dodd, and Margaret M. White). In our previous list the names of S. G. Cimmering, G. I. Culank, and Lena Finkelstein shoûld have been given as now printed.

The President reported that a vacancy on the Court of Examiners, caused by the retirement of Mr. L. Bathe Rawling, would be filled up at the meeting of the council on June 11th.

The Huddersfield Royal Infirmary was added to the list of hospitals recognised for the 12 months' surgical practice required of non-members before admission to the Final Fellowship Examination.

Royal College of Surgeons of Edinburgh.

At the last meeting of the College, with Dr. J. H. Ferguson, the President, in the chair, the following 23 candidates (out of 83 entered) who passed the requisite examinations between Jan. 5th and 13th were admitted to the Fellowship.

William Alistair D'Arcy Adamson, M.B. Edin.; Sundar Singh Ahluwalia, M.B. Punjab; George Lionel Alexander, M.B. Edin.; Alec Letts Dawkins, M.B. Adelaide; Harold Edmund Emmett, M.B. Manch.; Eric Leslie Farquharson, M.B. Edin.; Gerard Joseph Hanley, M.B. N.U.I.; Robert William Hendry, M.B. Aberd.; Richard William Johnson, M.D. Melb.; Isaiah Kallmeyer, M.B. Witwatersrand; Charles Herbert Leedman, M.B. Melb.; James Fraser Macdonald, M.B. Edin.; Leonard George McQueen, M.B. N.Z.; Bruce Toomba Mayes, M.B. Sydney; Stanley James Granville Nairn, M.B. Edin.; Belinda Elizabeth Nesbitt, M.B. Belf.; Papatla Pattabhiramaiya, M.B. Madras; Alan Alexander Pullar, M.B. N.Z.; Ian Monro Robertson, M.B. Edin.; Kenneth George Ward Saunders, M.R.C.S. Eng.; William George Eric Shand, M.B. N.Z.; George Drury Shaw, M.R.C.S. Eng.; Wilfred Charles Wickremesinghe, L.M.S. Ceylon.

The Bathgate memorial prize, consisting of bronze medal and set of books, was after a competitive examination in materia medica awarded to Norman Walter Nisbet.

Glasgow University Club, London.

This club is to hold its annual summer dinner at the Café Royal, Regent-street, at 7.30 P.M., on Friday, June 12th. Prof. Gilbert Murray is to preside. Any Glasgow University men who, though not members of the club, would like to attend are requested to communicate with the hon. secretaries, 62 Harley House, N.W. 1.

Committee on Welfare of the Blind.

In view of the continued development in work among the blind, owing to the operation of the Blind Persons Act, 1920, and the Local Government Act, 1929, and the new problems constantly arising in connexion with this service, the Minister of Health has reappointed the Advisory Committee on the Welfare of the Blind for a further period of office. The Committee has been constituted so as to afford representation to the local authorities concerned with the working of the Blind Persons Act, 1920, and to voluntary associations for the blind, as well as to organised blind workers. The Chairman is Lord Blanesburgh, and the members include Dr. Alfred Eichholz, Dr. S. J. C. Golden, and Dr. J. Middleton Martin. The Committee will advise the Minister on matters relating to the care and supervision of the blind, including any question that may be specially referred to them by the Minister. Mr. F. M. Chapman, of the Ministry of Health, will act as secretary.

University of London.

The Goldsmiths' Company has decided to offer, subject to the consent of the Charity Commissioners, which will probably have to take the form of a scheme under the Charitable Trusts Acts confirmed by Parliament, and subject to certain other conditions, a sum not exceeding £50,000 towards the cost of erecting and equipping the library building of the new headquarters of the University in Bloomsbury. The University library, at present housed in the Imperial Institute, South Kensington, contains some 260,000 volumes and pamphlets.

Congress of Comparative Pathology.

The second international congress of comparative pathology will be held at the Paris Faculty of Medicine from Oct. 14th to 18th, under the presidency of Prof. C. Achard. Membership is open to doctors, veterinarians, and phytopathologists, and national committees have been constituted in participating countries.

Liverpool Medical Institution.

The fourth Hugh Owen Thomas memorial lecture will be given in the Medical Institution at 4.30 P.M., on Thursday, May 28th, by Mr. D. McCrae Aitken. His subject will be "Principles of Rest and Exercise in the Treatment of Joints."

University of Belfast.

It has been decided that the honorary degree of D.Sc. shall be conferred on Dame Louise McIlroy, professor of obstetrics and gynæcology in the University of London, Mr. Joseph Barcroft, F.R.S., professor of physiology in the University of Cambridge, Maj.-General J. W. D. Megaw, director-general of the Indian Medical Service, and Dr. Hugh Hampton Young, professor of urology in Johns Hopkins Hospital, Baltimore.

Sweepstakes for Hospitals.

The governors of the Royal London Ophthalmic Hospital, City-road, have ascertained the opinion upon the desirability of sweepstakes for hospitals of those who contributed to its funds last year. Of those who answered, 59 per cent. were opposed and 41 per cent. were in favour. Many of the latter based their assent on the ground that abnormal times justify abnormal methods; others agreed conditionally that no loss of ordinary contributions would be involved.

Hospital Out-patients.

The conclusions and recommendations of the Council, discussed on April 28th at a special meeting of the St. Pancras Division of the British Medical Association (see THE LANCET, May 2nd, p. 1001), were carried by 14 votes to 9 at the annual general meeting of the division on May 12th.

Ladies' Medical Golfing Society.

The spring meeting was held on May 14th at Northwood Golf Club, Middlesex. The results were as follows:—Canny Ryall Challenge Cup: Mrs. Gordon Holmes, 90–19=71. Scratch prize: Miss M. Lett, 86. Handicap prizes: First Division, 1st, Mrs. de Paula; 2nd, Mrs. Ritchie. Second Division, 1st, Miss A. Bristow; 2nd, Mrs. J. Gibson. Third Division, 1st, Miss S. Dudgeon; 2nd, Mrs. Perry. Flag Medal Foursomes: 1st, Mrs. Gordon Holmes and Mrs. Russell-Smith (beyond 20th hole); 2nd, Mrs. Oldershaw and Mrs. Burn (19th hole).

University of Dublin.

The usual three weeks' post-graduate course for general practitioners will be given this year in the School of Physic, Trinity College, and at certain clinical hospitals in Dublin from Sept. 14th to Oct. 3rd. Sir Edward Sharpey-Schafer will give the first John Mallet Purser lecture on June 26th in the medical school and has chosen for his subject The New Physiology. This lectureship was founded by Miss Sarah Purser in memory of her brother who held the chair of physiology in Trinity College and was later Regius professor of physic in the University. The lecture will be open to all medical practitioners and medical students. Among those who are to receive honorary degrees at the summer commencements, to be held on July 3rd, is Prof. Ariens Kappers, director of the Brain Research Institute at Amsterdam. Dr. Kappers has promised to give three lectures when he comes to Dublin for the ceremony. Sir John Rose Bradford, F.R.S., ex-President of the Royal College of Physicians of London, is to receive an honorary degree on the same day.

NOTES, COMMENTS, AND ABSTRACTS

EUGENIC STERILISATION.

EXPERIENCE IN CALIFORNIA.

THE fact is well known in this country that it is in California that the experiment of eugenic sterilisation has been carried to the fullest lengths. A semi-popular book entitled Sterilisation for Human Betterment,[1] describing the experiences of various American States, was published in 1929 and briefly reviewed [2] in our columns at the time. The original papers from which this summary was made have been collected in a single volume and are now available.[3]

Up to Jan. 1st, 1930, a total of 10,877 operations for eugenic sterilisation had been performed in America. Of these, 6787—nearly two-thirds of the total and more than ten times as many as in any other State—were done in California. In several States sterilisation laws have been passed and for various reasons repealed. Of these reasons the commonest has been that when compulsorily applied the measure is incompatible with the principles of individual liberty which are laid down as the right of every American citizen. There was in fact some uncertainty as to whether laws passed by separate States might not be superseded by the Federal laws. In 1927 however the question was settled in a manner satisfactory to advocates of eugenic sterilisation by a case from the State of Virginia which was carried through the Circuit Court to the Supreme Court of the United States, where the judgment of the Virginian Court was confirmed by Mr. Justice Holmes.

THE QUESTION OF PROMISCUITY.

It has frequently been urged in opposition to the principle of eugenic sterilisation that such a measure would lead to an increase of promiscuity and to a dissemination of venereal disease. The results of the Californian experiment indicate that this expectation is not borne out when sterilisation is combined with a thorough programme of parole and social after-care. A questionaire relating to the effects of sterilisation on sexual behaviour was sent to parole and probation officers of the State and to the secretaries of associated charity organisations. These yielded 22 replies covering a total of 2154 women who had been observed from periods ranging up to 14 years, some of the cases being duplicated. In this series there were only half a dozen instances in which the operation was thought to have contributed to sexual misbehaviour. No instances were observed amongst 3000 sterilised males. The findings as a whole, it is claimed, compare favourably with those of other investigations of paroled patients who have not been sterilised. The conclusions of the investigation are summarised in the following words:

> Under the conditions in which sterilised feeble-minded patients have been paroled in California, such parole does not tend to increase the amount of promiscuity in the population, but greatly decreases it. The possibility of the spread of venereal disease is decreased to a corresponding degree.

This contention is substantiated by a further claim that marriage without the responsibilities of parenthood exerts a stabilising influence upon defectives. Referring to a series of 124 marriages of defective girls whose course has been observed, the following statement is made:

> Had these girls not been sterilised, and had they promptly become mothers after marriage, it is not likely that so large a percentage of successes would have been recorded. Many of them who have the capacity to fulfil such responsibilities as wifehood involved in this social stratum would lack the capacity to take care of a steadily increasing number of children even if the husband were able to support the family. Unquestionably many of them, in view of their mental and emotional equipment, are not well qualified to bring up children successfully. On the other hand, freedom from childbearing enables these deficient girls to work outside the home with at least two useful results:—
>
> (1) They add to the family income, so that even if both husband and wife are economically not very efficient their joint earnings are adequate to support them comfortably; and
>
> (2) They are kept busy and out of mischief.
>
> Sterilisation, then, seems definitely to be a factor in the success of these marriages.

Stress is laid throughout on the importance of combining the system of parole and after-care with one of eugenic sterilisation.

RESULTS OF MATING.

The mean size of families of persons sterilised in Californian State Hospitals for the Insane is, for married men 1·64 living children, and for married women 2·03; for all men, including unmarried, 0·61 children, and for all women 1·85 children. The following conclusion is added: "In general, no large group of institutional insane in California will produce enough children wholly to reproduce itself even if it were not sterilised, the complete family being only two or three children. (Higher figures have been reported elsewhere.)"

An important conclusion of the recent Mental Deficiency Committee, which in 1929 reported upon the incidence of mental deficiency in this country, was that high-grade defectives were for the most part born of low-grade families which exhibited various forms of anti-social behaviour. The Californian investigation has resulted in a different finding, the discrepancy being probably accounted for by the very different social conditions which prevail in the two places. In the American investigation of the family status of the parents of defectives, no distinction was made between those which gave rise to primary and secondary aments. The following conclusion embraces both types:

> The fact stands out prominently that the institution is not kept filled by the progeny of the down-and-outers, the poor-house group, or even the unskilled labourers. It represents all grades of the population.

The following is a conclusion of an analysis of 126 marriages of 28 months' average duration after eugenic sterilisation.

> There was found to be no significant relation between the length of time that elapsed between the girl's first commitment and marriage, and her success in matrimony. This length of time represents the period when she was subject to control and discipline, was learning good habits or unlearning bad ones; it might be supposed that the longer this period of apprenticeship, the better would be her subsequent achievement. But the fact is not so.

The husbands of defective girls were classified in terms of the grade of the occupations of the husbands and a correlation was made between the grade of the occupation of the husband and the grade of defectiveness of his wife. It was concluded that "there is no tendency on the part of the superior husbands—i.e., those of higher Barr rating—to select more

[1] By E. S. Gosney and Paul Popenoe. London: Macmillan and Co. 8s. 6d.

[2] See THE LANCET, 1930, i., 60.

[3] The Human Betterment Foundation. Collected Papers on Eugenic Sterilisation in California. Obtainable from Mr. E. S. Gosney, 26, N. Marengo-avenue, Pasadena, California; 8s. 6d. A limited number of copies can be obtained from the Secretary of the Eugenics Society at 20, Grosvenor-gardens London, S.W.1

intelligent girls who were better behaved prior to commitment."

EFFECT ON INDIVIDUALS.

Histories obtained from 65 normal men who had undergone vasectomy voluntarily, and whose subjective testimony was deemed reliable, showed that the operation resulted in no significant change in their ability to control the duration of coitus or in the frequency or pleasure derived from the act, or in any unusual sense of fullness or discomfort in the scrotum, or in any feeling of distension or lack of complete relief from the orgasm. In 13 of the cases both cut ends of the vas were ligated; in 50 the lower end was left patent, and in two the records are incomplete on this point. Rejuvenating effects claimed by Steinach to occur after the operation were not observed.

The volume contains many other observations of interest and the material is subjected to very thorough statistical analysis. That many of the sociological conclusions are inapplicable to this country is to be expected from the geographically unstable character of the population of California.

AID TO INVALID CHILDREN.

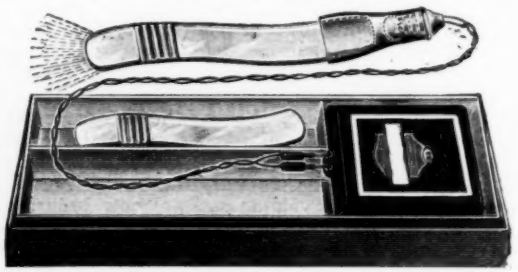
ADDRESSING the annual meeting of the Invalid Children's Aid Association, held at Londonderry House on May 5th, Sir Humphry Rolleston spoke of the value of the Association's work from the point of view of physicians and surgeons. Any doctor who had worked in an out-patient department would admit the difficulty of ascertaining why a particular child was jumpy, why it could not sleep, what was the cause of its ailing condition. The medical officer of an out-patient department could not go into the homes of his patients and find out the conditions there, but a wise visitor could give him much useful information which would help him in diagnosis and treatment. Social service in connexion with hospital practice had not been sufficiently utilised in this country, and the after-care given by I.C.A.A. workers in the homes was invaluable from the medical point of view. Lord Burnham, who presided, mentioned the satisfactory record of 1930. During the year new cases referred to the Association amounted to 16,023, while old and new cases helped had reached a total of 24,134, more than 7000 children having been sent away to convalescent homes. The Dean of Westminster emphasised the value of the voluntary spirit in work of this nature, and asked for offers of personal service. Mr. Hugh Walpole pleaded for the new areas growing up around London, for the dwellers in rows and rows of little houses all alike, all having about the same amount of means, and far removed from hospital facilities. The I.C.A.A. wanted to extend its work to places of that kind. Mr. Mitchiner went further, and said that families who had gone to live in the new districts had been driven back to London, in order to get the necessary help for crippled or invalid children. A plea for financial support was ably put forward by Dame May Whitty, and the usual resolutions, adopting the report and accounts, electing the council and executive committee for the ensuing year, and pledging the meeting to obtain the necessary financial support, were carried.

NON-STEAMING SPECTACLE GLASSES.

WE have received a pencil of "Clarocit," the function of which is to prevent condensation forming on spectacles. The pencil is to be rubbed with a circular motion on both sides of the lens which is then polished with a handkerchief, when it is claimed that the glasses will remain clear in any atmosphere for a period of at least 24 hours. The makers have testimony from medical men of its value when operating in hot theatres, which we can confirm from other sources. The pencils are made by The Clarocit Co., Ltd., 110, Gt. Portland-street, London, W.

THE "BRILITE" TONGUE SPATULÆ.

AN old method of illuminating microscopic objects by means of a bent glass rod which, by internal reflection, conveyed the light from a dark chamber containing a lamp, has now been ingeniously applied to a tongue depressor which has been put on the market



by the Holborn Surgical Instrument Company, Ltd., 26, Thavies-inn, London, E.C. In this case the source of light is a small electric bulb, which is concealed in a metal socket into which the glass tongue depressors are inserted. The light is conveyed along the blade of the spatula and out through the end of it, giving a brilliant illumination. Spatulæ can be kept ready sterilised, and a fresh one used for each patient. The outfit shown in the illustration, which is British made, consists of two spatulæ, adult and children's size, respectively, with lamp socket, cords, and battery in box. The price is moderate.

Births, Marriages, and Deaths

BIRTHS.

BELLAMY.—On May 18th, at Welbeck-street, W., the wife of Dr. W. A. Bellamy, of a daughter.

INNES.—On May 17th, in London, the wife of L. Walrond Innes, F.R.C.S., of Windsor-villas, Lockyer-street, Plymouth, of a son.

MCNAIR.—On May 13th, at Welbeck-street, W., the wife of Arthur J. McNair, F.R.C.S., of a daughter.

O'KEEFFE.—On May 16th, at Merstone, Tring, the wife of Dr. C. E. O'Keeffe, of a son.

ROOKE.—On May 12th, at Grove House, Runcorn, to Dr. and Mrs. Rooke—twin boys.

WOOKEY.—On May 13th, at Station-road, Hendon, the wife of Eric E. Wookey, L.D.S. R.C.S., of a daughter.

MARRIAGES.

EVANS—YARDLEY.—On May 14th, at Holy Trinity Church, Brompton, Thomas Charles Jameson Evans, M.A., M.B., B.Chir. Camb., to Mary Elizabeth, younger daughter of the late Frank Yardley, M.A., and of Mrs. Yardley, of Solihull, Warwickshire.

ORMEROD—MARTIN.—On May 16th, at All Saints' Church, Woodford Wells, Essex, Thomas Laurence Ormerod, M.B., to Margaret Muriel Challis, second daughter of Mr. and Mrs. H. C. Martin, of Elm View, Woodford Green.

DEATHS.

BLAKESLEY.—On May 16th, suddenly, Henry John Blakesley, F.R.C.S. Eng., of Severn-street, Leicester, in the 73rd year of his age.

CLOWES.—On May 10th, at Belsize Park-gardens, Hampstead, Dr. Herbert Alfred Clowes, aged 75.

DOBSON.—On April 29th, 1931, at Burley, Leeds, Joseph Dobson, M.D. Lond., aged 85.

GILLIS.—On May 14th, after an operation, Max David Gillis, L.D.S., D.D.S., formerly of South Africa.

GLYNN.—On May 12th, at Bryn Bella, St. Asaph, Thomas Robinson Glynn, M.D., F.R.C.P., Emeritus Professor of Medicine, the University of Liverpool, aged 90 years.

HIGGINSON.—On May 12th, after a very short illness, Dr. George Higginson, M.R.C.S. L.R.C.P., Captain R.A.M.C.T., and Hon. Captain, Serbian Army, Order of St. Sava and of the Serbian Red Cross, of Ragleth House, Church Stretton, aged 63.

MACCONKEY.—On May 17th, at Lyndhurst, Blindley Heath, Surrey, Alfred Theodore MacConkey, M.B., B.Ch.

MILNER.—On May 12th, suddenly, at Reading, Dr. S. W. Milner, late of Bere Alston, Devon.

WALLACE.—On May 11th, at Pirbright, Surrey, Dr. James Robertson Wallace, M.B., C.M. Edin.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.